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WITH BOB-WHITE IN MEXICO.

BY E. W. NELSON.

Plate II.

WHILE traveling in Mexico a few seasons ago, I arrived at a small town near the southern end of the tableland in the State of Puebla. The first business in hand was to secure suitable quarters for myself and assistant. Having accomplished this I was ready at an early hour the following morning for a tramp into the surrounding country. It chanced to be market day, and passing the outskirts of the town I met a straggling procession of Indians, in picturesque costumes, some driving heavily loaded donkeys, others carrying on their own backs crates of fruits, vegetables, handmade pottery, and other simple wares. All were pushing forward eager to take part in the keenly relished pleasures of petty chaffering, which would enable them to return home with a few *decimos* knotted in the ends of their sashes. Some of the men saluted me with a polite "bueños dias senor," but I noted that their conversation was carried on in the Aztec tongue, as spoken by their fathers centuries ago.

Once free of the last houses a convenient opening in the fence was soon found, and I crossed into a great field which reached for miles down the broad, open valley. Areas covered with wheat and corn stubble indicated the character of the last crops,

while farther away broad belts of brilliant green sugar cane were in vivid contrast to the dry browns and yellows of the general surface. The sun was shining brightly, and the fresh balmy air seemed full of life-giving power. The musical notes of Meadowlarks were heard at intervals, and on one side of the valley flocks of Red-winged Blackbirds were swirling back and forth over some small marshy spots grown up with tules. Through the valley bottom flowed a little stream of clear, sparkling water, which, before reaching the distant shore of the Pacific, runs a wild course through the mountain gorges of Guerrero. Behind me arose the mysterious pyramid of Cholula, crowned by a white walled chapel, which now occupies the place of ancient sacrifice. Over to my right stood the gigantic form of the Smoking Mountain — hoary old Popocatepetl — with the gleaming robe of the White Lady — Iztaccihuatl — shining over his shoulder. In front a sweeping plain descended for many miles through a district of great sugar estates to the far horizon, where it was walled in by the blue front of distant mountains.

Turning to one side I approached some scrubby bushes which appeared to offer shelter for birds or other game. Suddenly the familiar accents of my mother tongue fell on my ear. I listened with bated breath. Again arose in clear, round tones, the calls so familiar in my boyhood days, 'Bob White,' 'Bob White.' With eager steps I hastened forward to a small group of acacias, and there, quietly perched on top of a bush, was an old friend, the author of the notes. It is difficult to describe the mingled pleasure and exultation caused by this unexpected meeting. It proved to be the Puebla Bob-white (*Colinus graysoni nigripectus* Nelson) and during the following days a number of others were seen, and it became evident that my friend of the first morning was one of a colony located in the neighborhood.

Afterwards, during my Mexican travels, I learned that the Bob-whites are widely spread in that country and although many of them have changed the color of their dress more or less, yet their customs and tricks of speech remain much the same as in their northern home.

At a later date during this same season, while working down the eastern slope of the Cordillera in Vera Cruz, near the City of

Orizaba, we found others of the family, known as the Black-breasted Bob-white [*Colinus pectoralis* (Gould)]. They were living in brush-grown and weedy old fields — sometimes straying about the coffee plantations — and were on friendly terms with most of their tropical neighbors. Fortunately, in these parts guns and dogs are few, and mostly harmless, so that Bob's days were generally peaceful and contented. But even here life was not without its cares, for the spotted tiger cats and woolly-haired opossums, with sad lack of consideration, were given to nocturnal raids that filled them with terror and sometimes lessened their numbers.

From Orizaba our wanderings led far away over plains and mountains to the City of Tehuantepec, on the hot lowlands bordering the Pacific coast. There we found our friends again but known as the Coyolcos Bob-white [*Colinus coyolcos* (Müll.)]. They were common, and although their garb had changed considerably, yet their voices and mode of life remained true to the family traditions. Indeed, so fixed are old habits among them that even long association with the suave and politic Mexican has failed to cure Bob of one custom that I often deplored during my youthful days, when, gun in hand, I sought to make his acquaintance. I refer to that abruptness of manner which is shown in such a disconcerting way when one comes upon him in his favorite haunts.

Near Tehuantepec their home is on the partly wooded and partly grassy plains. Old fields and grassy prairies, that extend irregularly amid the scrubby forests of that district, are their favorite haunts. Here the mesquites, mimosas, acacias, cassias, Brazil wood, ebony, mahogany, Spanish cedar, and other tropical trees and bushes, give the landscape quite a different aspect from that which Bob is accustomed to see in his northern home. Old cornfields and weedy indigo plantations are popular resorts and furnish an abundance of food. Brush fences of thorny scrub are built about these fields and serve as fine places of shelter in times of danger. The Quails do not penetrate heavily wooded bottoms along streams, where the moisture causes a vigorous tropical forest growth, unless some farmer hews out a clearing for his cornfields. In these forest belts the Motmots, Trogons, Red-

and-Yellow Macaws, several species of Parrots and other tropical birds abound, and a little farther south troops of spider monkeys are encountered. In many places it is but a few steps from the dense shade of the bottoms, where the harsh screams of the Macaws dominate all other woodland notes, to the borders of grassy prairies where our friends pass their sedate lives associated with Meadowlarks and Sparrows. Throughout this region where deer, peccaries, Tree Pheasants and other game is plentiful, smaller birds are considered unworthy of powder and shot, all of which conduces greatly to peace of mind among the Bob-whites.

While traveling down the coast from Tehuantepec into Chiapas we found them numerous most of the way, and they were a constant source of interest and pleasure. Their cheerful notes were frequently heard from the scrubby bushes near the trail, and the neat, trimly built little fellows carried on their small affairs with little regard for our presence. While riding at the head of the pack train I frequently found them scratching in the sandy trails, dusting themselves or searching for food. At such times it was amusing to note the pretty air of doubt and hesitation with which they awaited my approach before finally moving rather deliberately a few yards to one side, when I came too near. Now and then the male could be heard uttering little querulous notes as if in subdued protest at being disturbed. After entering Chiapas, the coast was left behind and we passed into the interior through a series of beautiful open valleys ornamented with scattered bushes and belts of trees. It was during the rainy season and the vegetation was growing luxuriantly; everywhere were myriads of flowers, and the innumerable plume-like heads of tall grasses nodded gracefully in the passing breezes. In these valleys the Bob-whites were very common. It generally rained during the night, but the clouds broke away at dawn leaving a brilliantly clear sky. We were up and on our way at sunrise, amid the invigorating freshness of early morning, when every leaf and twig bore a pendant water-drop that sent out quivering rays of light with the first touch of the sun. On every hand were new flowers and strange birds. Now and then the Central American Mockingbird, in full-throated ecstacy, poured out its rich song, and over it all, at short intervals, the clear call of 'Bob White'

arose from a bush or low tree. At an altitude of about 3000 feet we passed out of their range and did not find them again until we reached the valley of Comitan, on the Guatemalan border, where their notes were heard. A few miles farther on, just after entering Guatemala, a single female, which proved to be quite different from those taken in Mexico, was brought me by an Indian. This specimen served as the type of the Guatemala Bob-white (*Colinus insignis* Nelson). Beyond this nothing was learned of them in these remote parts.

From Comitan valley we made a long circuit over the Guatemalan highlands and reached the Pacific coast again on the border of Chiapas. There, on some grassy prairies in the midst of the forested coast plain, a few miles back from the sea, we found many Bob-whites of a previously unknown branch of the family.[1] In this vicinity an attempt was made many years ago to establish a large colony of Americans. They came with great flourish of trumpets and large expectations, but the climate did its silent work so effectually that two or three stranded relics were all that remained. Over the desolate sun-scorched flats near by, the same cheery call of the Quail sounded in the ears of the Mexican ox-drivers and muleteers as they carried their cargoes of coffee and cacao to the coast, that I had heard from many a field and thicket over thousands of miles of varied country to the north. Among these sturdy little Americans there appeared no sign of degeneration, and it was pleasanter to meet them than some of my countrymen of a larger growth. So many failures at colonizing people from the north in these hot southern lands had come to my notice that I had become skeptical of its successful accomplishment in any instance; yet here in the tropics were the Bob-whites, essentially a group of the temperate regions, living as cheerfully as possible and upsetting my preconceived ideas.

After passing some time in this district we hired an ox cart one evening and were trundled across the plains to the coast during the cool hours of the night. There, on the sandy shore, we waited ten days for a steamer which finally carried us back to

[1] *Colinus salvini* Nelson.

Tehuantepec. From this place a railroad crosses the Isthmus to the port of Coatzacoalcos on the Gulf of Mexico, and we took advantage of it to reach the eastern coast. Coatzacoalcos is a curious little town destined to play an important part in the development of southern Mexico and western Guatemala. It is one of the few places in Mexico where small frame houses are the prevailing style and reminds one more of some small mining camp in the Far West than of a seaport on the Gulf of Mexico. Here where yellow fever, malaria, and other ills stalk about according to the season, we heard of howling monkeys, jaguars, tapirs and other tropical creatures with which we still desired to become more familiar. For this purpose we ascended the Coatzacoalcos River about twenty miles to the town of Minatitlan, a place once noted for its enormous trade in Spanish cedar and dye woods. We remained here some days in the midst of the coast lowlands where the tropical forest is interrupted by grassy prairies of considerable extent. In visiting these prairies we were surprised and delighted to find another of the Bob-whites that had not been previously known even to those most familiar with the ramifications of this good old stock.[1] Afterwards we found them a few miles out of Coatzacoalcos, and they were seen a little farther north in the open country about the shores of beautiful lake Catemaco. This latter point is probably near their limit in that direction. The handsome appearance of this unexpected species is shown in the accompanying drawing (Plate II) by Mr. J. L. Ridgway.

The distribution of the Mexican Bob-whites is curious and shows that the family has been long in the land. They range over parts of the cool tableland and extend down to the tropical lowlands of both coasts, but are unaccountably absent from many apparently suitable places.

Many changes have taken place in their garb owing to the influences and requirements peculiar to such varied situations, but the general style is retained so that their relationship cannot be mistaken.

A representative of this group lives in Yucatan which, it is said

[1] Godman's Bob-white, *Colinus godmani* Nelson.

by some, belongs to the family proper, but if this is so, there must be a bar sinister on its escutcheon to account for some of its peculiarities.

At present eleven branches of Bob-whites are known to live in various parts of Mexico, and our work has enabled us to introduce four of them to the friends of the family. Wherever they were encountered over this great area it was interesting to observe how closely they continue to resemble one another in notes and habits. From the border of Canada to Guatemala they hold true to a general style of speech and manners that always betrays their connection; with the possible exception of the Yucatan branch, of which I am unable to give any definite information.

For the charming qualities and pretty ways of these little friends of the field, I trust their days may be many and their numbers never grow less.

As it is quite possible that some of our mutual friends may have the opportunity to call upon these Mexican connections of 'our Bob,' I have taken some trouble to secure their names and addresses which are given below. The directory is complete, I believe, up to date.

1. *Colinus ridgwayi* Brewster. Ridgway's Bob-white. Sonora; ranging south from the Arizona border. (Between 1000 and 2500 feet above sea level.)

2. *Colinus virginianus texanus* (Lawr.). Texas Bob-white. Northeastern Mexico; Nuevo Leon and Tamaulipas. (From near sea level up to 2500 feet.)

3. *Colinus graysoni* (Lawr.). Grayson's Bob-white. Southern part of tableland; from San Luis Potosi and northern Jalisco to Valley of Mexico. (3000–7500 feet.)

4. *Colinus graysoni nigripectus* Nelson. Puebla Bob-white. Tableland of southern Puebla. (3000–6000 feet.)

5. *Colinus pectoralis* (Gould). Black-breasted Bob-white. Eastern base of Cordillera in Vera Cruz; from Jalapa to Isthmus of Tehuantepec. (500 to 5000 feet.)

6. *Colinus godmani* Nelson. Godman's Bob-white. Lowlands of southern Vera Cruz; probably also ranging into Tabasco. (From sea level to 1500 feet.)

7. *Colinus coyolcos* (Müll.). Coyolcos Bob-white. Pacific coast of Oaxaca and Chiapas; from City of Tehuantepec to Tonala. (From sea level to 3000 feet.)

8. *Colinus atriceps* (Ogilvie-Grant). Black-headed Bob-white. Putla, western Oaxaca. (About 4000 feet.)

9. *Colinus salvini* Nelson. Salvin's Bob-white. Coast plains of southern Chiapas, near Guatemalan border. (Sea level to 500 feet.)

10. *Colinus insignis* Nelson. Guatemala Bob-white. Valley of Comitan in Chiapas, into adjacent border of western Guatemala. (3000–6000 feet.)

11. *Colinus nigrogularis* (Gould). Yucatan Bob-white. Yucatan. (Sea level to 500 feet.)

SUMMER BIRDS OF SITKA, ALASKA.

BY JOSEPH GRINNELL.

THE WELL-KNOWN humidity of the Northwest Coast apparently reaches its extreme in the region about Sitka. The temperature is moderate throughout the year, and this, together with the excessive moisture, favors the growth of the heavy coniferous forests which cover almost every bit of land from the sea-level up to the lower limit of the summer snows on the mountains. Every one of the hundreds of small islands which convert Sitka Bay into an intricate network of narrow channels, is densely timbered, even to the water's edge.

However, along the shores, especially at the heads of the numerous inlets where the streams enter the ocean, are narrow strips of shorter vegetation, such as alders and salmonberry bushes. These small tracts of deciduous growth, together with the taller timber immediately adjoining, are the localities most frequented by the smaller land birds. In fact, the dark mossy forests but a few rods back from the coast are almost destitute of bird life.

For the most part the shores are rocky and the land rises directly out of the water, so there are few beaches. Indian River is a swift mountain stream which rises among the snow-capped peaks scarcely ten miles to the northward, and enters the sea a half mile east of Sitka. At its mouth are rather extensive sandy tideflats and bars, which are about the only ones in the vicinity and so form an important attraction to the Waders.

A few of the smaller islands farthest out to sea, are inhabited by water birds. St. Lazaria Island is twenty miles southwest of Sitka, and is the one in this region chosen by thousands of sea-birds as a breeding-ground. It is irregularly shaped, about a quarter of a mile in length by three hundred yards in its broadest part. The rocky sides are broken and precipitous, and are the resorts of the Murres, Guillemots and Cormorants. The island is mostly crowned by a heavy growth of large firs and hemlocks, but around the margins sloping down to the brink of the cliffs there is a rank growth of tall grasses. The Gulls and Puffins prefer these grassy banks as nesting places, while the Petrels' burrows are most numerous within the timbered portion.

My observations in the vicinity of Sitka were continuous from June 8 to August 24, 1896. During that time I collected many birds nearly all of which were summer residents, a few early migrants being taken during the last few weeks of my stay. The present list is the result of these collections and observations, and its value principally lies in the fact that the known geographical and breeding range of several of the species is more or less extended.

No birds are included of which specimens were not taken, so that the identity is correct, so far as I am aware. Pigeon Hawks, presumably *Falco columbarius suckleyi*, were observed on several occasions but were not secured. Also a Duck Hawk was noted. Ptarmigan and Grouse were reported as being common, the former breeding at the snow line on the mountains immediately back of Sitka. All my efforts to obtain specimens, either personally or from the Indians, were unsuccessful. The 'Siwashes' always brought them in with their necks wrung and most of the feathers plucked.

Unless otherwise noted, all specimens were taken in the vicinity of Sitka.

Professor H. H. Hindshaw of the University of Washington, Seattle, who was at Sitka during part of the summer, collected many birds and he has kindly allowed me to use his notes. Credit is duly given him for such as are included in this list.

I here have an opportunity to express my thanks to Mr. Fred Frobese of Sitka for his aid and friendship during my residence

there, and I would recommend him to anyone visiting Sitka as a most hospitable gentleman, and one who will give heartily any needed information or assistance.

Finally, to Mr. Robert Ridgway and Mr. William Palmer of the National Museum, I am greatly indebted for the identification of specimens, and for suggestions in regard to this paper.

1. **Gavia imber.** LOON. — Several seen; the Indians brought them in frequently.

2. **Gavia pacificus.** PACIFIC LOON. — One specimen, a female, was shot June 26, by Dr. Wilber, of the Mission Hospital. It is in full adult plumage.

3. **Gavia lumme.** RED-THROATED LOON. — Prof. Hindshaw took a fine pair of these Loons, together with a single downy young, on a grass-margined pond a few rods back of Sitka. No nest was seen, and the young bird, though apparently only a few days old, was able to dive in the most energetic style. Previously there had been no sign of the Loons about the lake during the day, but every morning and evening one of them would be seen flying to or from the lake, circling high overhead, and uttering its lunatic laugh.

4. **Lunda cirrhata.** TUFTED PUFFIN. — Swarming by the thousands and breeding on St. Lazaria Island. Every grassy bank on the sides of the island were riddled with their burrows. On June 17, these burrows contained fresh eggs, and on July 7, the eggs contained large embryos.

5. **Fratercula corniculata.** HORNED PUFFIN. — Not at all common; 12 were taken at St. Lazaria Island, and but a few others seen. I saw them enter crevices in the cliffs, and in one instance a burrow in a steep bank, among those of the Tufted Puffin. So they were probably breeding.

6. **Cerorhinca monocerata.** RHINOCEROS AUKLET. — Two pairs of these Auks were taken out in the bay on July 21, by my Indian, and several more were seen. The state of the reproductive organs and the bare area on the breast indicated that these birds were incubating, though where, I did not ascertain.

7. **Cyclorrhynchus psittaculus.** PAROQUET AUKLET. — A single adult male was taken June 8, by Mr. Frobese, and presented to me. It was the only one seen.

8. **Brachyramphus marmoratus.** MARBLED MURRELET. — Very common about the numerous inlets and bays, and a large series was taken, including several in immature plumage. They were evidently breeding, though, as I learned afterwards, on some islands over thirty miles distant. (See 'Osprey,' May, 1897.)

9. **Cepphus columba.** PIGEON GUILLEMOT. — Very common along the rocky shores of the outlying islands. On August 4, these birds seemed about to begin nidification, as they were carrying grasses to nests in

niches under boulders and on the sides of the cliffs. I found no eggs, although many nests were examined.

10. **Uria troile californica.** CALIFORNIA MURRE. — Numerous among the outlying islands. Many nearly fresh eggs were secured on July 28.

11. **Rissa tridactyla pollicaris.** PACIFIC KITTIWAKE. — Common about the inland bays and narrows; although many specimens were taken, not only in immature plumage, but in full adult, none showed any signs of breeding.

12. **Larus glaucescens.** GLAUCOUS-WINGED GULL. — The common Gull of Sitka Bay, and the only one found breeding. The nests were slight hollows in the ground among the tall grass on the higher parts of the islands. These nest-hollows contained a slight lining of dry grasses. Two or three eggs constituted a set. Fresh eggs were found from June 16 to August 4.

13. **Larus philadelphia.** BONAPARTE'S GULL. — One specimen, an immature male, was brought in by my Indian July 21. It was shot out in the open bay and was the only one seen. These small Gulls were very numerous on some parts of the steamer passage from Killisnoo and Juneau, south to Queen Charlotte Sound, August 25–27.

14. **Puffinus griseus.** DARK-BODIED SHEARWATER. — A female was brought in by the Indian on July 15, and another, July 21. He reported seeing several others. They were in the open bay. As far as I am aware, this is the first recorded instance for Alaska.

15. **Oceanodroma furcata.** FORK-TAILED PETREL. — Breeding in considerable numbers on St. Lazaria Island, where on June 17, most of the eggs were badly incubated, and several young were taken. (See 'Nidologist,' March, 1897.)

16. **Oceanodroma leucorhoa.** LEACH'S PETREL. — Breeding in immense numbers on St. Lazaria Island, where the eggs were fresh on

MEASUREMENTS OF *O. leucorhoa* FROM ST. LAZARIA ISLAND.

No. Coll. J. G.	Sex.	Date.	Wing.	Tail.	Forking of Tail.	Tarsus.
1138	♂	June 17	5.70	3.00	.75	.92
1307	♂	July 7	5.75	3.10	.80	.84
1309	♂	July 7	5.85	3.10	.70	.87
1310	♂	July 7	5.85	3.10	.70	.90
1437	♂	August 5	6.10	3.30	.90	.95
1440	♂	August 5	5.90	3.10	.80	.87
1441	♂	August 5	6.00	3.20	.70	.92
1438	♀	August 5	5.75	3.10	.70	.90
1439	♀	August 5	6.10	3.30	.90	.93
1311	♀	July 7	5.60	2.95	.65	.89
Average.....			5.86	3.12	.76	.90

June 17. This Petrel outnumbers the last approximately 5 to 1. (See 'Nidologist,' March, 1897.)

Mr. Palmer, on comparing my Sitka birds with Atlantic specimens, finds the former averaging smaller, but otherwise similar. About half have considerable dusky white at the base of the rectrices.

17. **Phalacrocorax pelagicus robustus.** VIOLET-GREEN CORMORANT. — Breeding abundantly on the more exposed outlying islands. The immature birds and others not breeding remained in flocks about the rocks and reefs further inland. The nests were usually situated on the shelves of rock on the perpendicular sides of the islands. I noted a row of 15 nests in a single transverse crevice on the face of a promontory. The nests are deeply saucer-shaped and compactly made of grass and turf. The eggs are 2 to 4 in number, oftener 3, and resemble other Cormorants' eggs except in size, being on an average considerably smaller. Six selected sets containing the extremes measure: 2.20 × 1.38, 2.08 × 1.41, 2.19 × 1.50, 2.26 × 1.46; — 2.05 × 1.40, 2.09 × 1.39, 2.17 × 1.44, 2.15 × 1.46; — 2.13 × 1.37, 2.07 × 1.38, 2.10 × 1.37; — 2.22 × 1.49, 2.28 × 1.43, 2.23 × 1.48; — 2.42 × 1.47, 2.43 × 1.40, 2.37 × 1.45; — 2.52 × 1.44, 2.11 × 1.40, 2.07 × 1.42. The average of fifty eggs is 2.19 × 1.42. This Cormorant nests late; a few fresh eggs were taken on July 8, and many slightly incubated, on July 28.

18. **Merganser serrator.** RED-BREASTED MERGANSER. — One shot on August 18, by Professor Hindshaw, and others seen. Young in down were brought in by the Indians early in July.

19. **Aythya marila nearctica.** AMERICAN SCAUP DUCK. — Large numbers in flocks remained all summer among the inside islands. Apparently but a few bred. A juvenile nearly fledged was brought in on July 15.

20. **Histrionicus histrionicus.** HARLEQUIN DUCK. Quite numerous on the most exposed outlying reefs about which large flocks of nearly fledged young appeared by August 5, when many were shot. I saw an adult in June, two or three miles up Indian River, where it was probably nesting.

21. **Oidemia deglandi.** WHITE-WINGED SCOTER. — Common among the outlying islands in flocks of six to a dozen. No young seen.

22. **Oidemia perspicillata.** SURF SCOTER. — An adult male, taken July 28, was the only one observed.

23. **Ardea herodias.** GREAT BLUE HERON. — Frequent along the secluded inland shores. Nearly fledged young brought in July 2.

24. **Phalaropus lobatus.** NORTHERN PHALAROPE. — Arrived August 3, after which it became very numerous about the kelp-beds and tidedrifts out in the bay.

25. **Tringa bairdii.** BAIRD'S SANDPIPER. — Prof. Hindshaw took a specimen August 16, the only one observed.

26. **Tringa minutilla.** LEAST SANDPIPER. — First specimen taken July 2, after which it became common in small flocks on the sandbar at the mouth of Indian River.

27. **Ereunetes occidentalis.** WESTERN SANDPIPER. — First specimens

taken July 6. Soon afterwards common on the sandbars at Indian River.

28. **Heteractitis incanus.** WANDERING TATTLER. — A pair taken on an exposed rocky islet 28 miles south of Sitka on August 4, and two others seen.

29. **Charadrius dominicus.** — AMERICAN GOLDEN PLOVER. An immature male, taken by Prof. Hindshaw on August 16, was the only one observed.

30. **Ægialitis semipalmata.** SEMIPALMATED PLOVER. — Common after July 25, in company with *Ereunetes occidentalis*, on the sand-bar at Indian River.

31. **Aphriza virgata.** SURF BIRD. — Sixteen taken from a flock on a rocky islet on July 21. These were all apparently immature birds, that is, non-breeders of the second year.

32. **Arenaria melanocephala.** BLACK TURNSTONE. — Several taken July 21, and a few others noted occasionally afterwards on the bar at Indian River. Single individuals were quite frequently flushed from the rocky reefs at low tide. The specimens obtained are in slightly worn adult plumage.

33. **Hæmatopus bachmani.** BLACK OYSTER-CATCHER. — Companies of from three to a dozen or more were common on all the exposed reefs and rocks. Broken egg-shells were found in a depression among the pebbles on an islet on June 16.

34. **Accipiter velox.** SHARP-SHINNED HAWK. — Noted on several occasions on the wooded mountain sides. Noisy young were following their parents on August 5.

35. **Accipiter cooperi.** COOPER'S HAWK. — Several seen during the second and third weeks of August. A badly decomposed specimen, the wings and feet of which are saved, was found on the beach August 20.

36. **Accipiter atricapillus striatulus.** WESTERN GOSHAWK. — Mr. Frobese shot an immature male on August 5, and others were seen after that date.

37. **Haliæetus leucocephalus alascesis.** ALASKAN BALD EAGLE. — Common along the coasts throughout the Sitkan District. The nests were to be seen built in tall fir-trees on nearly every promontory. The young had not left their nests on August 5.

38. **Ceryle alcyon.** BELTED KINGFISHER. — Tolerably common along the coasts after its first appearance, July 28.

39. **Dryobates villosus harrisii.** HARRIS'S WOODPECKER. — A few seen in the scattering timber in the immediate vicinity of Sitka, where they doubtless breed. The only specimen secured was an adult male, on July 4.

40. **Colaptes cafer saturatior.** NORTHWESTERN FLICKER. — Noted occasionally about Sitka in the dense forest a mile or more back from the beach. I was informed that both this form and *Colaptes auratus* became quite numerous in the fall. The fancy dance costumes of the Indians were often ornamented with the tail-feathers and wings of both species.

41. **Selasphorus rufus**. RUFOUS HUMMINGBIRD. — Tolerably common in the more open clearings about Sitka, and along the quiet shores of secluded inlets. A nest containing eggs nearly hatched was found on June 10. It was 5 feet above the ground on the horizontal branch of a small fir.

42. **Empidonax difficilis**. WESTERN FLYCATCHER. — Common throughout the deep forests which border the streams. They remained for the most part in the upper foliage of the tall trees, and consequently were not easily seen, but their characteristic notes nearly always betrayed their presence. A female was taken June 30 which contained an egg ready to be laid. By the first of August the young with their parents appeared about Sitka in the clearings, and were then easily observed. The habits and notes of *E. difficilis* in Alaska seemed to be substantially the same as those of our Southern California birds.

43. **Cyanocitta stelleri**. STELLER'S JAY. — Common along the edge of the timber near the shore wherever I landed. By concealing one's self and imitating their callnote, their curiosity seemingly overcomes them, and they quietly come within a few feet to investigate. In this way I succeeded in collecting a series of 30 birds which are usually very wary and difficult to approach. The first young were taken on July 4.

44. **Corvus corax principalis**. NORTHERN RAVEN. — An abundant and well-known scavenger. It congregates about the streets of Sitka and along the beaches with as much familiarity as Black Vultures are said to do in the South. Although apparently so tame they are extremely cautious and wary, and the mere sight of a gun is sufficient to send every Raven flopping off with loud calls of alarm. I did not learn of its breeding anywhere about Sitka.

45. **Corvus caurinus**. NORTHWEST CROW. — Common on the small islands in the bay, especially so on St. Lazaria Island where the young and eggs of the Sea-birds constituted its staple articles of food. Nearly fledged young were observed on June 17, on that island.

46. **Loxia curvirostra minor**. AMERICAN CROSSBILL. — Flocks of these birds frequented the tops of the tallest firs, where on account of their quietness that may easily escape notice. The six specimens taken are of the small Northwest Coast form.

47. **Junco hyemalis oregonus**. — OREGON JUNCO. — Numerous in the open brushy localities. First juveniles, just out of the nest, taken June 11. This Junco was one of the commonest land-birds about Sitka, and by the first of August had gathered into small flocks which came into town and foraged familiarly about the streets.

48. **Melospiza fasciata rufina**. SOOTY SONG SPARROW. — Tolerably common in the brushy or grassy margins of the forests along the beaches. They were most numerous on St. Lazaria Island in the tall grass which grows so luxuriantly on portions of the island. Fully fledged young were taken on July 7.

49. **Melospiza lincolnii**. LINCOLN'S SPARROW. — Two or three pairs

bred in the grassy margins of the pond back of Sitka. A juvenile about one third grown was taken on June 25. It was hidden in the matted grass, and was discovered by following the call-note, which was a ventriloquial, insect-like chirp, hard to locate. A single adult bird was secured, a female, on June 25. In a letter to Mr. Palmer, Mr. William Brewster writes concerning this specimen: —

"Your Lincoln's Sparrow from Sitka, Alaska, agrees closely with my types of *M. c. striata* in respect to the streaking of the upper parts, but it is less olivaceous and the buffy is less rich and deep. Making due allowance for seasonal and individual variation, I should think it not improbable that it may represent the breeding plumage of *striata*, but it would be of course unsafe to assume this positively on the strength of a single specimen."

50. **Passerella iliaca unalaschcensis.** TOWNSEND'S SPARROW. — Common in tall grass on St. Lazaria Island, where half-fledged young were observed on June 16. The song of this Sparrow is very musical, being loud and full like that of a Grosbeak, and yet with the intonation of a Song Sparrow.

51. **Chelidon erythrogastra.** BARN SWALLOW. — Breeding abundantly about town under the eaves of buildings; a few pairs found nesting on cliffs on the islands out in the bay.

52. **Tachycineta bicolor.** TREE SWALLOW. — Breeding commonly in old woodpecker holes in the tall dead firs at the foot of the mountains back of Sitka. Full-grown young with their parents appeared along the beaches by July 15. Soon after, they gathered in small flocks and were not seen after August 1, having evidently migrated.

53. **Helminthophila celata lutescens.** LUTESCENT WARBLER. — Tolerably common about clearings, and in the low growths of firs which border the beaches at the mouths of the streams. The males were in full song until the last of July. Full grown young observed on August 17.

54. **Dendroica æstiva rubiginosa.** ALASKAN YELLOW WARBLER. — A single adult male taken June 23, and a few others heard previously in the dense firs along Indian River.

55. **Dendroica townsendi.** TOWNSEND'S WARBLER. A single adult female taken August 14, and two others seen at the same time. They were in company with a flock of Chickadees and were rapidly hunting insects towards the extremities of fir boughs. They were probably migrants.

56. **Sylvania pusilla pileolata.** PILEOLATED WARBLER. — An adult male was taken on August 18, and several others, including juveniles, seen on August 21. They were in low brush along the shores of a secluded bay where they had probably bred.

57. **Anthus pensilvanicus.** AMERICAN PIPIT. A pair seen on a grassy tideflat beyond Indian River on June 10, and the female secured. From the condition of the ovaries, I judged that it would have laid eggs within a week.

58. **Troglodytes hiemalis pacificus.** WESTERN WINTER WREN. — Tolerably common in the more open forests, particularly where there was much recently-fallen timber. Especially numerous on St. Lazaria Island where their clear sprightly songs constantly uttered, seemed scarcely in accord with the harsh cries of the thousands of Sea-fowl.

59. **Certhia familiaris occidentalis.** CALIFORNIAN CREEPER. — Seen only in the tall timber along Indian River where I secured six specimens and saw several others. On July 2 took two scarcely fledged juveniles, apparently just out of the nest.

60. **Parus rufescens.** CHESTNUT-BACKED CHICKADEE. — Common everywhere, especially in the younger firs at the heads of the bays and inlets. First young fully fledged, taken June 26.

61. **Regulus satrapa olivaceus.** WESTERN GOLDEN-CROWNED KINGLET. — Common everywhere, particularly in the dense fir thickets along the streams. On June 22, I observed the first young. On that date, as I was carefully picking my way through a clump of firs, I chanced upon six of these mites of birds sitting in a row close together on a twig; but when one of the parents appeared and discovered me, her single sharp note scattered them in all directions with a chorus of squeaks, and then in a moment all was quiet and not one to be seen, although all were probably watching me intently within a radius of ten feet. The call-notes of these Golden-crests resemble closely those of the Creepers.

62. **Regulus calendula grinnelli.**[1] SITKAN KINGLET. — This Kinglet was not very common, and I only observed it along Indian River in the tract of tall firs. Their beautiful song could frequently be heard during June and the first part of July from the upper foliage of the dense fir-trees, where the birds were exceedingly hard to locate. I saw them in pairs on two occasions, but I secured no young. This Kinglet doubtless breeds, though not in abundance. Three adult males were secured.

63. **Turdus ustulatus.** RUSSET-BACKED THRUSH. — Tolerably common along Indian River and on some of the small islands in the bay. No young were obtained but they certainly breed. Their beautiful songs were heard until the middle of July.

64. **Turdus aonalaschæ.** DWARF HERMIT THRUSH. — Very common everywhere, especially on the small wooded islands. At low tide they were frequently to be seen feeding among the kelp and rock-weed along the shores. The first young were taken July 2, and young only half-fledged were taken on August 15. The song of this Thrush is most exquisite. Mr. Palmer informs me that one of my specimens approaches *T. a. auduboni* quite closely.

65. **Merula migratoria propinqua.** WESTERN ROBIN. — A few adults were observed throughout the summer among the more open parks three or four miles inland from Sitka along Indian River. Several large flocks of juveniles appeared on July 25, and were thenceforth common.

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[1] Wm. Palmer, Auk, XIV, Oct. 1897, p 399.

66. **Hesperocichla nævia.** VARIED THRUSH. — Tolerably common in the deeper woods; first young, scarcely feathered, taken on July 2. By August 1, the young began to gather in considerable numbers and together with the Robins and other Thrushes were feeding on the blueberries.

THE SUMMER BIRDS OF THE WEST VIRGINIA SPRUCE BELT.

BY WILLIAM C. RIVES, M. D.

THE portion of the mountain region of the Virginias to which the present paper relates, is spoken of in the following terms in an amusing sketch in 'Harper's Magazine' for December, 1853 (Vol. VII, p. 18). "In Randolph county, Virginia, there is a tract of country containing from seven to nine hundred square miles, entirely uninhabited, and so inaccessible that it has rarely been penetrated even by the most adventurous. The settlers on its borders speak of it with dread, as an ill-omened region, filled with bears, panthers, impassable laurel brakes and dangerous precipices. Stories are told of hunters having ventured too far, becoming entangled, and perishing in its intricate labyrinths." Its features are also depicted in a volume called 'The Blackwater Chronicle' (New York, 1853), which treats of a hunting trip to the locality in question, and a brief allusion will be found in 'Picturesque America,' Vol. I, pp. 390, 391. It is now partly within the limits of Tucker County, and forms, or we shall soon be obliged to say formed, a part of the black spruce belt of West Virginia. "It is probable," says Major Hotchkiss, an authority on the natural resources of the Virginias, "that nowhere in the United States are now existing denser forests than those of black spruce in the belt of country, more than 100 miles in length and from 10 to 20 in breadth, that extends through Greenbrier, Pocahontas, Randolph and Tucker Counties. Only the northern end of this vast spruce forest has been penetrated by railways, the

West Virginia Central and Pittsburgh R. R. being the only one that has yet really entered into it."

The region of spruce thus described, consists of a lofty plateau lying almost exclusively to the west of the main Alleghany range, varying in altitude from 2500 to 3000 feet and traversed in a general northerly and southerly direction by various mountain ridges five to fifteen hundred feet higher, the maximum elevation above sea level being about 4700 feet. It contains in its northern portion the sources of the Cheat and North Branch of the Potomac Rivers and in its southern, the head waters of the Greenbrier, a branch of the New River.

The area of which in particular I speak is drained by the Blackwater River with its tributaries, which rising in the so-called Canaan valley flows tranquilly at an unusually high altitude for nearly a dozen miles, with a fall of probably not more than one hundred and fifty feet in that distance, until reaching the steep western edge of the plateau it plunges swiftly downwards to enter the Dry Fork of Cheat River. The sources of the Blackwater and of the North Branch of the Potomac, it may be remarked, are separated by an almost imperceptible difference of level. This section of the country maintained its primitive wildness until about fifteen years ago, when the West Virginia Central and Pittsburgh R. R. penetrated its forests and the town of Davis was established at the junction of Beaver Creek with the Blackwater, not far from the picturesque falls of the latter stream. In company with Mr. Bancel LaFarge I spent the period from June 4 to June 12, 1891, at Davis, finding the general aspect similar to that of Maine or northern Wisconsin, rather than in accordance with one's preconceived ideas of a southern State, and the avifauna, as might have been anticipated, markedly Canadian and Alleghanian in character, whereas in most other parts of the Virginia mountains, where the above faunæ exist, we usually find them overlapped by the Carolinian. No one, however, who now visits the Blackwater country will find a region of exclusively virgin forests such as is described in the writings to which I have referred. Saw-mills, tanneries, pulp mills and lumber camps stand where the timid deer formerly came to slake its thirst and the ponderous and unwieldly bear found an unmolested abode,

and it is for the most part requisite to travel for many miles from the railway to find a place to which the wood cutter has not yet penetrated.

With Dr. William C. Braislin, I revisited Davis last summer, staying from June 9 to June 15. The destruction of timber which had already begun before the time of my first visit had progressed with startling rapidity, during the six years that had elapsed, and instead of the more or less unbroken sea of green tree tops formerly visible, the eye now rested upon a country disfigured by prostrate logs stripped of their bark, misshapen and unsightly stumps, and dead trees blackened and destroyed by fire. Railways for getting out the timber, or tramways as they are locally designated, have been forced into the heart of the woods in several places and the spruce cut down for many miles. The Beaver Creek Railway starting from Davis has now, I believe, been constructed for as much as eighteen miles, and a wide belt of timber on each side removed. In a few directions, however, it is still possible to reach the forest from Davis without great difficulty, the nearest point being about a mile and a half. These forests which are being thus so rapidly removed, consist principally of black spruce, hemlock and birch, the spruce being valued for its timber and the hemlock mainly for its bark. They are very dense and contain trees of magnificent proportions, while they are rendered practically impassable wherever it occurs, by the laurel (*Rhododendron maximum*), which covers abundantly the extremely rough and uneven surface of the ground and forms continuous 'brakes' of great extent. The earth beneath is often carpeted with moss and lycopodiums, but with the exception of the *Oxalis acetosella* and an occasional trillium, no great variety of flowering plants was observed. The forests of evergreens do not, however, appear to occupy the country exclusively. A half mile or so to the north or northwest of Davis, the spruce seems to end and deciduous trees to be found, and we were told of the existence of beech woods, mention being also made of 'glades' comparatively open, in a south-easterly direction towards the Canaan valley. In the streams of this region, trout are to be taken in numbers, but the various mills at Davis have destroyed the fishing in the Blackwater below the town, and it is necessary to go some dis-

tance to its head waters, to catch them. Among the mammals showing the northern character of the fauna, the Red Squirrel (*S. hudsonicus*) is commonly found. As the timber is being cut out, a corresponding change is taking place in the avifauna; many of the Warblers and other Canadian birds have naturally disappeared and the cleared land has been occupied in their stead by Towhees, Song Sparrows, Catbirds, House Wrens and other birds of the more open country, while the dead timber is very congenial to Woodpeckers, so that there was a marked alteration in the distribution of the birds in the vicinity of the town, between my first and second visits. The Snow Birds, however, were evidently little affected by the changes and were as abundant in the cleared land as in the forests.

In exploring the country in search of birds, particular attention was devoted to the spruce forests, as likely to be the special home of the Canadian fauna, and time employed in searching the other woods would doubtless have been rewarded by finding there some additional species. Almost all of the birds were excessively shy; the song of the Winter Wren constantly trilled forth from the depths of the rhododendron thickets, but the tiny songster himself was seldom seen, and though the notes of the Magnolia and other Warblers were frequently heard, it was often a most difficult achievement and necessitated straining one's neck to the utmost, to get a sight of these interesting little birds, as they flitted from one lofty tree top to another. I append a list with brief notes, of the different species observed.

1. **Aythya affinis.** LESSER SCAUP DUCK. — On June 11, Dr. Braislin obtained a Duck from a young man who told us it had just been shot on the Blackwater River. It proved to be a Lesser Scaup, female. In this connection it is of interest, as Dr. Braislin has pointed out to me, that Mr. W. E. Clyde Todd has found this species in the breeding season in Western Pennsylvania.

2. **Actitis macularia.** SPOTTED SANDPIPER. — One or two noticed along the Blackwater.

3. **Bonasa umbellus.** RUFFED GROUSE. — Said to occur in the neighborhood. Reported to have been seen during our stay last summer.

4. **Cathartes aura.** TURKEY BUZZARD. — Two were seen June 10, 1897, if we were not mistaken, in the distance high in air. The rarity of this bird was especially noticeable.

5. **Dryobates villosus.** HAIRY WOODPECKER. — Not uncommon.

6. **Dryobates pubescens.** DOWNY WOODPECKER. — Only observed once or twice.

7. **Sphyrapicus varius.** YELLOW-BELLIED WOODPECKER. — A fine male specimen was taken by Dr. Braislin, June 12, 1897.

8. **Ceophlœus pileatus.** PILEATED WOODPECKER. — Known to the residents of the region under the name of Woodcock. None, however, were seen during either of my visits.

9. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER. — Apparently not uncommon in the clearings.

10. **Colaptes auratus.** GOLDEN-WINGED WOODPECKER. — One or two noted.

11. **Chordeiles virginianus.** NIGHTHAWK. — A few seen at evening.

12. **Chætura pelagica.** CHIMNEY SWIFT. — Occasionally observed.

13. **Sayornis phœbe.** PEWEE. — Only once or twice noted.

14. **Contopus borealis.** OLIVE-SIDED FLYCATCHER. — One or two pairs were observed along the Blackwater River in June, 1891, apparently breeding. None seen last year.

15. **Contopus virens.** WOOD PEWEE. — The notes of this species were heard on one or more occasions.

16. **Cyanocitta cristata.** BLUE JAY. — Occasionally to be met with. Not uncommon.

17. **Corvus corax principalis.** NORTHERN RAVEN. — We saw on several occasions, last June, and heard the hoarse notes of birds which we had little hesitation in referring to this species, and though, as far as they were concerned, we may perhaps be said like Mr. Torrey, who has lately described[1] so pleasantly his experiences 'In Quest of Ravens,' to have brought back with us, strictly speaking, only interrogation points, yet I think our identification was undoubtedly correct. The bird, moreover, seemed to be well known to the dwellers in those parts, who informed us that there were no Crows in the region. This agrees with Mr. Brewster's observation that the two species do not occur together in the North Carolina mountains. The Ravens, we were told, came to the slaughter houses morning and evening for food, but as we were not quite so confident of the regularity of this habit as our informant, we did not test the accuracy of his knowledge, in the short time at our disposal. I think that I also saw Ravens on my former visit in 1891.

Mr. Kirkwood, in his 'List of the Birds of Maryland,' mentions, on the authority of J. H. Fisher, Jr., that during Christmas week, 1892, about 20 were seen at Bayard, W. Va., but that they could not be approached within rifle shot. On Dec. 6, 1893, several were seen at the same place. Bayard is a comparatively short distance north of Davis, at a somewhat lower elevation.

18. **Quiscalus quiscula æneus.** BRONZED GRACKLE. — Three observed together on June 12, 1897, one of which was taken by Dr. Braislin, and

[1] Atlantic Monthly, June, 1897.

proves on further examination to be, in some degree, an intermediate and not quite typical.

19. **Spinus tristis.** AMERICAN GOLDFINCH. — Several were seen in the open on June 12, 1897.

20. **Passer domesticus.** ENGLISH SPARROW. — Common about the town of Davis.

21. **Spizella socialis.** CHIPPING SPARROW. — Not uncommon.

22. **Spizella pusilla.** FIELD SPARROW. — The notes of this bird were recognized by Dr. Braislin.

23. **Junco hyemalis carolinensis.** CAROLINA JUNCO. — Abundant everywhere; this and the Song Sparrow were the most numerous species observed. Birds from this locality approach the southern form of Junco more nearly than some of Dr. Dwight's Pennsylvania specimens, which he kindly showed me, and in fact appear to be decidedly *carolinensis*.

24. **Melospiza fasciata.** SONG SPARROW. — Abundant throughout the cleared land, in the underbrush.

25. **Pipilo erythrophthalmus.** TOWHEE. — Rather common in the clearings.

26. **Progne subis.** PURPLE MARTIN. — Last season, three or four pairs occupied Martin boxes in the town. Also seen on my previous visit.

27. **Chelidon erythrogastra.** BARN SWALLOW. — A few individuals noted on the edge of the town by the river.

28. **Ampelis cedrorum.** CEDAR BIRD. — Not uncommon. Observed to be apparently nesting in 1891.

29. **Vireo solitarius.** SOLITARY VIREO. — Very shy. Certainly once identified in 1891. Notes attributed to this species not infrequently heard.

30. **Dendroica cærulescens.** BLACK-THROATED BLUE WARBLER. — Rather common in the forest. These Warblers usually had black on the back, but varied in the amount, some being almost typical *cairnsi*, and others having little or no trace of it.

31. **Dendroica maculosa.** MAGNOLIA WARBLER. — The commonest of the Warblers in the spruce forests.

32. **Dendroica virens.** BLACK-THROATED GREEN WARBLER. — Apparently the least common Warbler; extremely shy.

33. **Dendroica pensylvanica.** CHESTNUT-SIDED WARBLER. — Rather common in the half cleared land. Not found in the spruce forests. Not observed in 1891.

34. **Seiurus noveboracensis.** NORTHERN WATER THRUSH. — Very retiring but rather common along the streams.

35. **Geothlypis philadelphia.** MOURNING WARBLER. — Seemingly not rare in the clearings among the bushes. Individual males were singing within certain limited areas. The females kept themselves well concealed, for none were detected. This, I believe, is the furthest southern record for this species in summer.

36. **Geothlypis trichas.** MARYLAND YELLOW-THROAT. — The notes of this bird were heard by both of us on June 10, 1897, and one was seen by Dr. Braislin. Not recorded in 1891.

37. **Sylvania canadensis.** CANADA WARBLER. — Not uncommon in the forest, sometimes occurring in pairs, which were doubtless, from their actions, breeding.

38. **Galeoscoptes carolinensis.** CATBIRD. — Not uncommon.

39. **Troglodytes aëdon.** HOUSE WREN. — Unusally abundant among the stumps and half burnt trees of the cleared land, where its song was frequently heard. Dr. Braislin discovered a nest containing seven eggs, in a cavity at the end of a fallen partially burnt tree, on June 10, 1897.

40. **Troglodytes hiemalis.** WINTER WREN. — Abundant in the forest, finding a most congenial home among the rhododendrons, which for the most part effectually concealed its presence, until its proximity was disclosed by its beautiful song.

41. **Certhia familiaris americana.** BROWN CREEPER. — Not uncommon. Frequents the hemlocks.

42. **Sitta canadensis.** RED-BREASTED NUTHATCH. — Not uncommon. The drawling character of its notes distinguish it readily from the White-breasted, which was not observed.

43. **Parus atricapillus.** BLACK-CAPPED CHICKADEE. — Rather common.

44. **Turdus ustulatus swainsonii.** OLIVE-BACKED THRUSH. — A male specimen was taken by Dr. Braislin, June 14, and others were heard. This is, so far, the furthest southern record of the species in summer. Owing to their excessive shyness and the very rough character of the country, it was almost impossible to obtain a sight of these birds, but I am inclined to consider them not uncommon. The measurements of the one secured are as follows: Wing, 3.98; tail, 3.12; tarsus, 1.06; culmen, .50.

45. **Merula migratoria.** AMERICAN ROBIN. — Not very abundant; seen in suitable localities.

46. **Sialia sialis.** BLUEBIRD. — A few seen in the cleared land.

During our stay at Davis, Dr. Braislin and I also saw one or two small Hawks, of what species we were not quite certain, and were shown a Hawk's nest in a lofty tree, but did not see either of the pair to which it belonged. On June 13, we noticed a small bird on a telegraph wire in the town, apparently a Wren with rather a long tail. Its song which we did not recognize, differed from that of any Wren we were familiar with. After a few moments, it flew to the top of one of the houses, and we were unable to observe it further. We were disposed to regard it as Bewick's Wren.

NESTING HABITS OF ANTHONY'S VIREO.

BY C. W. AND J. H. BOWLES.

IN THE vicinity of Tacoma, Washington, this Vireo, *Vireo huttoni obscurus*, can scarcely be described as either rare or common, for the probability is that they are much more abundant than a casual, or even close, observer would be led to suppose. While we have noticed comparatively few birds, we have found several last year Vireos' nests so much resembling, in every detail, the identified nest described below that we feel little hesitation in thinking them the work of these birds. This, of course, cannot be considered a positive proof, for jumping at conclusions of this nature is extremely bad policy, but the theory seems all the more tenable for the two following reasons: First, this is the most unassuming and least noisy of any of the Vireos frequenting this locality; in fact, we have never heard it sing a note or make a noise of any kind whatsoever. This causes one to feel positive that many of these birds must have been overlooked. The second reason is that the nest taken by us does not resemble in the smallest degree the nests of either the Warbling Vireo (*Vireo gilvus*) or the Cassin's Vireo (*Vireo solitarius cassinii*), which are the only other Vireos known to breed in this section of the country.

The nest under discussion is, we are given to understand, the only one known to science where the identity is clear and indisputable. The situation from which it was taken is some eight miles from the city of Tacoma, in a thin fringe of small firs that border a rather extensive prairie. On this prairie are located the links of the Tacoma Golf Club, and, as these links are visited daily by large numbers of the players, it is fair to presume that the bird is not unsociably inclined towards mankind, as is its shy cousin, the Cassin's Vireo.

Like other Vireos' nests it was hanging, though in a somewhat peculiar way, being suspended, not from the usual crotch, but from two green twigs that grew from a small limb at an interval

of an inch and a half. It was placed nine feet up in a young fir, and five feet from the trunk of the tree.

Its composition is, as above mentioned, altogether different from that used by any other Vireo that has come under our notice. The outside material consists entirely of a long, hanging moss, which must be very closely allied to the *Usnea* of the Eastern States, very thickly and closely interwoven. The first point that strikes one, on looking at it, is the absence of outside patch-work of any kind, such as is almost invariably found on the nests of other Vireos. In fact, at first sight, there is a very striking similarity to many nests of the Parula Warbler (*Compsothlypis americana*). Its entire lining is composed of fine, dried grasses, thickly and neatly interwoven. The extreme outer dimensions in inches are: length $4\frac{1}{2}$, width $3\frac{1}{2}$, depth $2\frac{3}{4}$. The inside dimensions in inches are: length $2\frac{1}{2}$, width $1\frac{1}{2}$, depth 2.

The eggs, of which there were only two, resemble more closely certain specimens of eggs of the Red-eyed Vireo (*Vireo olivaceus*) than those of any other species in our collection that we have used in comparison. The ground color of both is a lustreless, milky white. In markings, No. I has a ring of dark brown dots, verging often into black, scattered sparingly around the larger end. Also one fine, hair-like line three eighths of an inch long, running between the dots like the lines on an Oriole's egg. No. II is simply and very sparingly marked all over the larger end with dots of the same color. Their measurements in inches are: No. I, .76×.56; No. II, .74×.55.

Incubation was about one half advanced at this date, June 21, 1897, which, if the date is not unusual, makes this bird breed later than either *cassinii* or *gilvus*, which commence incubation four and two weeks earlier respectively.

The female bird was on the nest when first seen and, unlike the majority of our Vireos, flushed the instant the ascent of the tree was attempted. From the nest, she flew about twenty feet into a neighboring fir, where she looked down on our operations with apparently no concern whatever. Beyond rearranging her feathers from time to time, there was nothing to indicate that she had a nest anywhere in the vicinity, as she made no sound or complaint of any kind. Neither was there any of the nervous

hopping from twig to twig in the manner by which so many of the smaller birds as clearly display their anxiety as they do by their notes of distress.

The male bird did not appear at all and, after waiting for him some three-quarters of an hour, we collected the female together with the nest and eggs.

PETRELS OF SOUTHERN CALIFORNIA.

BY A. W. ANTHONY.

FROM the day that I saw my first Petrel dancing over the waves of the Pacific none of the birds of southern California so thoroughly interested me or so completely baffled all attempts at a more intimate acquaintance. Several species were often common off shore and during such times dozens would pass and repass a sailing vessel but always keeping just out of gunshot. All of the coast islands were examined for breeding colonies but owing to my lack of experience and knowledge of their breeding habits, several years passed before any clue was found to their very restricted nesting grounds. In May, 1895, a small colony of Socorro Petrels was found on one of the Coronado Islands, but it was too early for eggs, and I was unable to revisit the island again at the proper season. Armed with the knowledge gained in 1895 I visited the island April 21, 1896, and camped five days, thoroughly exploring the northern and two middle islands of the group. On the first night of my sojourn I had scarcely fallen asleep, curled up on a rocky shelf just above the water, when I was suddenly recalled to my senses by a loud *Tuc-a-roo, tuc-tuc-a-roo* within two feet of my head. The call was repeated from half a dozen directions and as many bat-like forms were seen flitting back and forth in the moonlight along the cliffs and hillside. One or two attempts to shoot them proved utter failures and the black forms soon moved out to sea, returning at intervals of an hour or so all night. The next afternoon I

located one of the birds in a burrow under an immense rock, as I passed on my way to camp. It several times uttered a clicking note which I felt sure was that of a Petrel. During the evening I watched the hillside and discovered several burrows by following the direction of the call notes and watching the birds as they entered the holes, which were all under very large bowlders or in cracks in the ledges where it was impossible to secure eggs had there been any. From the large size of the Petrels I was reasonably sure that they were *Oceanodroma melania*, and marking several of the most likely burrows I returned the following day with a shovel and undermined the bowlders, letting them roll down the hill, hoping to uncover the nests, but all were so far back in the rocks that I secured neither eggs nor birds, nor could I determine whether they were nesting. From what I afterward learned I now know that they were mating and I was much too early for eggs.

On the 24th of April I visited the colony of Socorro Petrels discovered in 1895 and found a number of nearly finished burrows and one bird. I visited the same colony on June 12 and in each burrow found two Petrels, male and female, but no eggs. It was not until July 10 that I had an opportunity to again visit the island when I found both eggs and birds. Most of the eggs were more or less incubated, and two young ones were found not over two or three days old. They were mere little bunches of sooty down of uniform color, winking and blinking when brought to the light like little owls. In the same colony I found two Black Petrels with fresh eggs, confirming my identification of the birds seen on April 12. The eggs of *Oceanodroma socorroensis* were usually freckled with reddish spots in a more or less complete ring about the larger end, but those of *O. melania* were unmarked, as have been all that I have subsequently handled.

From the data I have accumulated I find that both of the preceding species inhabit the burrows for nearly three months before the egg is laid, usually both birds being found in the burrow until incubation begins. After the chick is a day or two old the parent is seldom if ever found in the burrow in the day time. On Guadaloupe Island a colony of *O. macrodactyla* were found breeding among the pines and oaks at about 2500 feet above the sea. Well incubated eggs were taken March 24, and

well grown young the middle of May. The range of variation in breeding in these three species of *Oceanodroma* presents an interesting study. The Guadaloupe Petrel, with a breeding season early in March, leaves the colony altogether by June 10, by which time *O. socorroensis* has not begun to lay, and *O. melania* is still later. I have found the last species incubating as late as September 8. I am quite sure that only one young is raised each year, though each species seems to have a rather long nesting season.

Little attempt is made at nest building by either the Socorro or Black Petrel, though a few sticks are often dragged into the burrow with an evident desire to construct something resembling a nest. The Guadaloupe Petrel, however, nearly always has a few dry oak leaves or pine needles at the end of the burrows I have opened, it making a much better attempt at nest building, owing perhaps to the fact that the burrows are dug among the trees where this class of nesting material is abundant, whereas the other species nest on barren islands and cannot so readily obtain desirable material.

In early June I have found the Least Petrel migrating along the coast of Lower California in company with the Socorro and Black Petrels, and in late July have found them nesting on the small rocky San Benito Island, fifty miles off the coast of the peninsula. So far I have never found the Least Petrel nesting in burrows. They have always been taken from the crevices in rocky ledges or among the loose stones. The pearly white egg is laid on the bare rock. Usually several are found within a few feet if desirable crevices are numerous. Young were taken as late as September 7 or 8 that were but a few days old. They were like the young of the three species of *Oceanodroma* I have mentioned, except for size. All are covered with sooty or slaty black down, through which the feathers appear when the bird is nearly or quite fully grown.

For the past ten years I have at times seen a small white-rumped Petrel at sea as far north as southern California but more common perhaps about Guadaloupe and Cerros Islands. They were quite common in April and May about Socorro Island and a few were seen off Clarion but, like veritable will-o'-the-wisps, they were always just out of reach and all attempts to identify

the species were unsatisfactory. No nesting colonies were found on the southern islands, — Socorro and Clarion, — all the birds seen at sea seeming to be migrants. July 15 found us becalmed in a fog not far from Guadaloupe Island. Black and Socorro Petrels were seen at a short distance from the schooner, passing and repassing, pausing for a moment at times to investigate objects thrown from the vessel. Several of the rare white-rumped form came and went with the rest but none ventured near the schooner. In hopes of getting at least a nearer view a skiff was launched and with my assistant, Mr. H. B. Kaeding, I spent two hours or more in drifting about a quarter of a mile or so from the vessel. In place of frightening the Petrels the smaller craft seemed to excite their curiosity and they often turned aside from their course to examine us. Several of the white-rumped birds were secured which have since formed the basis for a new species[1] named in honor of Mr. Kaeding as a slight recognition of his valuable services.

The breeding grounds of Kaeding's Petrel are at present unknown, but I have reason for supposing that they nest on Guadaloupe, in July. Those which were taken on the 25th of that month showed enlarged ovaries and the nesting season was but little if any passed. The wing of a small Petrel was picked up on Guadaloupe in September, 1896, and direct comparison made with specimens of *O. homochroa*, to which species I assigned the fragment after much hesitation. I am now reasonably sure it belonged to the new species. All of the species mentioned in the present paper depend almost entirely upon the young of the spiny lobster for food while on our coast, both adults and young having their stomachs filled with the larval stage of that crustacean, which is extremely abundant about all of our outlying islands during the spring and summer months.

In August and September Petrels are more abundant off our southwestern coast than during the rest of the year. The birds that have finished nesting congregate in regions where food is abundant, often following vessels for long distances to pick up what scraps of suitable food may be thrown over. I have on

[1] Auk, XV, Jan. 1898, p. 37.

several occasions hooked *O. melania* with a small hook baited with a piece of seal blubber, but as a rule they decline to be taken in by any such means. Both *O. melania* and *O. socorroensis* will at times dive a foot or more below the surface for a piece of meat that is sinking if they are hungry, but diving seems to be out of their usual line of business and is only resorted to when food is scarce. They seem to be unable to get below the surface of the water without first rising two or three feet and plunging or dropping, exactly as I have seen the Black-footed and Short-tailed Albatrosses dive under similar circumstances.

THE ECONOMIC VALUE OF THE WHITE-BELLIED NUTHATCH AND BLACK-CAPPED CHICKADEE.[1]

BY E. DWIGHT SANDERSON.

THE value of our common birds as insect-destroyers has of late years come to be recognized as an important field of investigation for the ornithologist and a large item in rural economy. Much valuable work has been done in determining their economic relations, but there has also been a large amount of assumption by various writers based on insufficient data. It is my purpose in this thesis to determine the character and amount of food and the economic relations of two of our most common residents, the White-bellied Nuthatch (*Sitta carolinensis* Lath.) and the Black-capped Chickadee (*Parus atricapillus* Linn.) from the analysis of the stomachs of 34 specimens of the former, and 28 of the latter, notes taken while collecting them, and incidentally from as much reliable data as could be found elsewhere.

METHOD OF ANALYSIS.

In no instance was any food found in the true stomach, mouth, or gullet, and the only part containing food was that ordinarily

[1] A Thesis submitted to the Faculty of the Michigan Agricultural College.

called the gizzard. This was removed and the contents carefully washed into a glass dish, in which it was spread out and examined under a dissecting microscope. The per cent of matter was determined by dividing the whole contents into various equal parts of the different components, as accurately as possible. In many instances the food was so finely divided that only its most general nature could be ascertained, and hence a stomach was often tabled as containing only one insect of a certain order when it doubtless contained the parts of many more, which were indistinguishable. Prof. E. H. Forbush states that Chickadees frequently pick out only the internal organs of larvæ, and as these are easily digested and not individually recognizable, such work would escape observation. The seeds were kindly determined, as far as their mutilated condition would permit, by Prof. C. F. Wheeler and Prof. W. B. Barrows, while many of the eggs were identified by Prof. Th. Pergande of the Division of Entomology, U. S. Department of Agriculture, to all of whom I wish to express my indebtedness. Very little of the insect food could be named further than given, with any degree of accuracy, and often it was impossible to determine anything below the order.

The specimens were all collected within a radius of five miles from the college. Record was kept of the sex, but no difference in the feeding habits was noticed, although most of the Nuthatches were secured in pairs. Notes upon the weather were also kept, but specimens were secured under all conditions, — both during a bright February thaw and a March snow-storm, and except as caused by the ground being covered with snow, no difference could be seen, save as noted between different periods. Neither did the time of day seem to cause any variation.

WHITE-BELLIED NUTHATCH. (*Sitta carolinensis* Lath.).

Thirty-four stomachs were secured, of which 23 were collected during the winter season (Jan. 14 to Feb. 24), snow covering the ground much of the time; while the last eleven were secured during the spring (April 10-17), before the foliage was out. The contents were tabulated and two totals made, showing the difference in seasons. I had wished to secure specimens during the

early summer for further comparison along this line, but as the birds were becoming very scarce near the college and little time was available for the work, I was unable to do so. Such a series would doubtless give some interesting data.

Vegetable Food.

Misled by the name, it has always been stated that Nuthatches feed on the kernels of nuts which they break open. I was fortunate enough to secure one specimen while 'hatching' an acorn, which was done at the apex, and secured the fruit. It had been cracked in two, and was quite wormy. Careful analysis of the vegetable matter found in the stomachs — even by microscopical sections — failed to reveal a trace of any acorn meat (but showed that supposedly acorn to be Indian corn), and furthermore it would seem that if that was desired, a sound specimen would have been selected by the bird. In view of these considerations, I am led to believe that the nuts — such as acorns and beechnuts — are sought merely for the insects which they contain.

During the winter the larger portion of the food was composed of seeds, which gradually decreased as insect life became more abundant. Those determined were: *Zea mays* in twelve stomachs, *Ambrosia artemesiafolia* in eight, and two *Helianthus* sp? Numerous other seeds were so badly broken as to be undeterminable. All were digested, and none, whether of noxious or beneficial plants, were consumed in quantities of any economic importance.

Insect Food.

A remarkable increase in the per cent of insect food is seen in the second series over the first, it forming 79.5 per cent in the spring, while only 25.7 during the winter. Seeds, on the other hand, were just the reverse, forming 67.4 during the winter and only 13.5 in the spring. The proportion of gravel remained comparatively constant at 6.2 and 7, as did also the amount of food at an average of .8 c.c. and .84 c.c. for the respective periods. In the latter series all the insects were adult, while in the former almost one-third were eggs or larvæ.

Hemiptera, largely *Piesma cineria*, were the most important insects in the first series; with Coleoptera next. These two orders made up the bulk of insect food during this period with the exception of a single stomach which contained some 25 Myrmicidæ. During the second period, Hymenoptera were found in considerable numbers, all being beneficial, and with about equal parts of Perlidæ and Coleoptera constituted the greater part of the insect food.

In the latter period there seemed to be a tendency to take larger insects, as evidenced by several good sized moths, which of course would lessen the number of individuals. Though the number of the insect forms eaten by the Nuthatches is comparatively small to that of those eaten by the Chickadees, yet it is no doubt due to the fact that their insect food is much more rapidly digested by the aid of the gravel, than in the Chickadees, which have none.

The following list gives in detail the insect matter found in the individual stomachs: Numbers 1, 7 and 8 were collected on Jan. 19; 9, 10, 11 and 14 on Feb. 2; 20 on Feb. 10; 21, 22, 23, 24, 25 and 26, on Feb. 16; 29, 30, 31, 32, 33, 34 and 35 on Feb. 20; 43 on Feb. 22; 41 on Feb. 24. (It will be noticed that the numbers are not consecutive.) 44 to 52 inclusive on April 10; 56 and 57 on Apr. 17. Only those partially or completely identified are listed, while the totals include the whole contents.

List of Insects Found in 34 Stomachs of the White-bellied Nuthatch.

Hymenoptera: Evaniidæ, 1 in No. 45; Braconidæ, 6 in Nos. 46, 47, and 48; Tenthredinidæ, 1 in No. 47; Formicidæ — *Myrmica* sp? — 25 in No. 22. Winter, 27 adults; spring, 14 adults. Total Hymenoptera — 51 adults in 7 stomachs.

Lepidoptera: Tineidæ — *Bucculatrix* sp? — 1 pupa in No. 22. Winter, 1 pupa; spring, 4 adults. Total Lepidoptera — adults, 4; pupæ; 1, in 5 stomachs.

Diptera: Muscidæ, 2 in No. 7; Syrphidæ, 1 in No. 49. Winter, 2 adults; spring, 4 adults. Total Diptera, 6 adults in 4 stomachs.

Coleoptera: Carabidæ, 3 in Nos. 56 and 42 — *Harpalus* sp? — 4 in Nos. 7 and 8; — *Pterostichus* sp? — 2 in No. 32; Elateridæ, 1 larva in No. 7; Buprestidæ, 1 adult in No. 41; Scarabidæ, 1 adult in No. 48. Winter, 17 adults, 22 larvæ; spring, 12 adults. Total Coleoptera — adults, 29; larvæ, 22; in 25 stomachs.

Neuroptera: Perlidæ, 23 in Nos. 32, 31, 43, 51 and 52; Libellulidæ, 1 in No. 45. Winter, 9 adults; spring, 17 adults. Total Neuroptera —26 in 7 stomachs.

Hemiptera: Tingitidæ. *Piesma cineria.* — 37 adults in 8 stomachs; Reduviidæ, 22 eggs in Nos. 11 and 24; Coreidæ, 2 adults in No. 10; Jassidæ, 7 adults in Nos. 14 and 45. Winter — 46 adults, 21 eggs; spring, 5 adults. Total Hemiptera — adults, 51; eggs, 21; in 13 stomachs.

Orthoptera: 4 in Nos. 8 and 10 (winter), Nos. 45 and 48 (spring.)

Total Insect Forms — Winter, 101 adults, 1 pupa, 22 larvæ, 21 eggs; spring, 60 adults. Adults, 161; pupae, 1; larvæ, 22; eggs, 21; =215. Arachnida, 7. Winter, 4; spring, 3.

A glance at the list will show that almost no well known injurious insects were found, the most common noxious form being *Piesma cineria*, which never does any considerable injury. As mentioned, one stomach contained a *Myrmica* sp? which possibly may be considered noxious. On the other hand, a large number of beneficial forms, such as Braconids, Reduviids and Carabids were found, and many that may be considered neutral as Perlidæ— and even those might be considered as valuable in the larval stage for fish food.

Thus it is seen that the insect food is taken more or less indiscriminately and that the beneficial forms fully equal those more or less injurious, while there were none found feeding upon any insect pest.

Habits.

The birds are invariably found in pairs; in only one instance did I find half a dozen together on a river bank, which doubtless were several pairs. The timber in this neighborhood consists of small lots of a few acres and each of these will ordinarily be occupied by only one pair of Nuthatches. They invariably feed upon rough barked trees; half of my specimens being taken on elms, with almost equal parts of the majority of the remainder on ash and oak. Three specimens were secured in an old apple orchard quite distant from any dwellings, and no others were found around fruit trees, possibly on account of the aforesaid preference for rough barked trees.

Abundance.

The abundance of the individuals or aggregate number per square mile is very difficult to determine. I generally secured about three for every two miles travelled. As I generally covered a radius of a quarter-mile each way from the straight line over the country travelled, I should think about five per square mile would be a fair average for this portion of the State. This would also, without doubt, be a fair sample of the greater part of the State, as there is only a moderate amount of bird life in this section. At Ithaca, N. Y., Mr. F. H. King found one for every two miles travelled.

It is to be regretted that I have been unable to secure any specimens from any infested orchard, so as to ascertain whether or not they will eat the most abundant food offered them.

Partial Domestication.

They have become very tame upon the campus and frequent the doors of the boarding-clubs, where they feed upon the refuse scraps. A pair of these have frequently been seen upon a porch-roof below my window, where they were feeding on the meat left in walnut shells, fruit, parings, and other refuse dropped there, and they would often come up and perch on the window sill. This would go to show that where protected, they would become permanent residents, quite soon, as they are not naturally of a timid disposition. Many authorities consider them highly beneficial, in fact class them with the Chickadees, but with the exception of their being found eating *Mytalaspis pomorum* by Professor Forbush in Massachusetts, there seem to be no satisfactory notes or data upon which to base this assumption.

Value.

Though, in view of these facts, I should desire to experiment somewhat with them in an infested orchard, before declaring them to be merely neutral, yet from all the data secured there would

seem to be but little doubt that the Nuthatch, both from its food and habits, is either absolutely neutral or of comparatively small economic importance.

BLACK-CAPPED CHICKADEE. (*Parus atricapillus* Linn.).

Twenty-eight stomachs were secured; the first nineteen during the winter, and the last nine in the spring, being the same periods in which the Nuthatches were collected. The contents were tabulated as for the Nuthatches.

Vegetable Food.

During the winter 39.3 per cent of the food was vegetable, though one-third of the stomachs contained no seeds whatever, while in the spring the food was wholly insect. The seeds identified were one *Avena sativa*, and one *Ambrosia artemesiafolia*, being practically the same as those upon which the Nuthatch fed.

Difference in Food as Affected by Season.

The same increase of insect food in the spring over that in the winter is seen as for the Nuthatch. During the winter 70.7 per cent of the food was animal, while in the spring no vegetable matter whatever was eaten. No trace of gravel was found in any of the stomachs. This is doubtless due to the small amount of vegetable food eaten, removing the necessity of a large amount of grinding to bring the food into a digestible condition. The total amount of food also remained nearly constant, being .48 c.c. in the winter and .53 c.c. in the spring. Even more markedly than in the Nuthatches, it is seen that in the spring far more adults, in comparison with the number of eggs and larvæ, were eaten than in winter. Whereas in the winter about $\frac{2}{13}$ of the insect forms were adult, $\frac{3}{13}$ larvæ, and $\frac{7}{13}$ eggs; in the spring, $\frac{4}{5}$ were adult, $\frac{1}{30}$ larvæ, and $\frac{1}{6}$ eggs. While the total bulk of the food in the spring was $\frac{1}{10}$ larger than that of the winter, yet there were over sixty times more forms eaten in the winter than in the spring, which was largely due to the enormous number of Reduviid eggs then

consumed. The fact that the spring larvæ had not yet emerged to any extent and that the adults were becoming active must also be carefully considered.

Character of Food.

Hemiptera, eggs and adults, formed by far the greater part of the food of the first period, with Coleoptera and Lepidoptera next, or possibly from an economic standpoint of equal importance. During the second period, the greater part of the food was adult beetles, with a large portion of adult Lepidoptera. In two stomachs, parasitic worms of considerable size were found. One was of a small, white and cylindrical form, while the other was white, but more flattened, with longer segments, and a true tape-worm.

Several well known insect pests were found in considerable numbers. Among them, four — *Bucculatrix* sp? — pupæ in two stomachs; 62 Noctuid larvæ in five; 105 Coleopterous boring larvæ in two; 15 *Aphis mali* eggs in 28; and 77 *Mytilaspis pomorum* scales in four stomachs. (Each of the latter doubtless covered fifty to seventy-five eggs.) The only beneficial forms found were nine adult Carabidæ in four stomachs and possibly the 450 Reduviid eggs secured from twelve stomachs may also be so considered, but the amount of their value is very uncertain. Thus it is seen, that injury done by eating beneficial insects is very small and of doubtful amount, while almost the entire food is composed of more or less noxious forms. The injurious forms were also eaten in large numbers, showing that the bird would be of considerable value toward their removal when placed among a large number of them, and undoubtedly would be especially useful in destroying a pest during the winter season. In fact, Prof. Forbush has shown by actual experiment (Mass. Crop Report, July, 1895, Ser. '95, Bulletin No. 3. Noticed in Auk Vol. XII, p. 383, 1895) that when these birds are present in the winter the destruction of the eggs at that time rendered it possible for the summer birds to destroy all the larvæ during a severe attack of the canker-worm, and the orchard thus produced a good yield, whereas elsewhere the trees were largely defoliated. The

following list gives the contents in detail: Numbers 2 and 3 were secured on Jan. 19; 4, 5 and 6 on Jan. 20; 12, 13, 15, 16, 17 and 18 on Feb. 21; 27 and 28 on Feb. 16; 36, 37, 38, 39 and 40 on Feb. 24; 42, Feb. 25; 53, 54, 55, 58, 59, 60, 61, 62 and 63 on Apr. 17.

List of Insects Found in 28 Stomachs of the Black-capped Chickadee.

Lepidoptera: Tineidæ — *Bucculatrix* sp? — 4 pupæ in Nos. 28 and 40; Ennomidæ — *Ennomos magnarius*, — 27 eggs in Nos. 27 and 39; Noctuidæ — 1 *Catocala* (?) — egg in No. 27, 62 larvæ in Nos. 2, 16, 27, 28 and 38. Winter, 6 pupæ, 66 larvæ, and 26 eggs; spring, 6 adults and 1 larva. Total Lepidoptera: adults, 6; pupæ, 6; larvæ, 67; eggs, 26; in 9 stomachs.

Diptera: Adults, 1; larvæ, 7; in 4 stomachs. All in winter.

Coleoptera: Carabidæ. — 9 adults in Nos. 6, 15, 40, and 43; Scarabidæ, 3 adults in Nos. 53 and 60; Cerambicidæ, 2 pupæ in No. 39; boring larvæ, 105 in Nos. 27 and 28. Winter, 29 adults, 2 pupæ, and 118 larvæ; spring, 18 adults. Total Coleoptera — adults, 7; pupæ, 2; larvæ, 118; in 16 stomachs.

Orthoptera: 3 eggs in No. 12. (Winter.)

Hemiptera: Tingitidæ — *Piesma cineria* — 3 adults in Nos. 27 and 42; Reduviidæ, 450 eggs of two species in 12 stomachs; Pentatomidæ — *Stiretrus anchorago* — 7 eggs in No. 5; Aphidae — *Aphis mali* — 15 eggs in No. 28; Coccidæ — *Mytilaspis pomorum* scales, 77 in Nos. 15, 18, 27, and 39. Winter, 108 adults and 461 eggs; spring, 5 adults. Total Hemiptera — adults, 93; eggs, 466; in 15 stomachs.

Total winter, 125 adults, 8 pupæ, 193 larvæ, and 504 eggs; spring, 24 adults, 1 larva, 5 eggs; in 15 stomachs. Total Insect Forms — adults, 149; pupæ, 8; larvæ, 194; eggs, 494 =845. Arachnida, 25.

Habits.

The Chickadee's habits of life also commend them as being beneficial. They are usually found in small flocks of from six to a dozen, of which the larger number are females. These often mix with those of Goldfinches and Tree Sparrows, or are found in company with a pair of Nuthatches, during the winter, but become more independent as spring advances and there is an abundance of bird life all about them. Over half of my specimens were secured in bushes on low, damp, marshy ground, or along a creek or roadside. They often descend to the ground in marsh land

and scratch among the dead rushes for any insects there. I am inclined to think that most of the Reduviid eggs were secured on such marshy ground. Tamarack was a favorite resort with many. About one-fourth were taken from oak trees, but on these they searched for insects upon the tips of the smooth branches, rather than on the rough trunk as do the Nuthatches. Two were secured in an apple orchard, while five others were seen coming from one. Many times they were seen in orchards near dwellings, where I was unable to secure them by use of the gun. When feeding on heavy timber, they frequent only the edges, where the injurious insects are invariably the most plentiful.

Abundance.

Owing to the fact that they go in flocks and are therefore not so evenly distributed as the Nuthatches, it is more difficult to determine their abundance. Although, on the average, about two were secured for every mile travelled, yet as they go in small flocks several were generally secured in an immediate vicinity. A flock of seven Chickadees is doubtless a fair average for each square mile, and in some parts of the State, especially the southeastern, I am sure that they are much more abundant in orchards than here.

Ability to Check Insect Pests.

If fifty-five insects were consumed per day by each bird, as will be shown to be the case, 385 would be consumed per day, and about 137,500 per year in each square mile. Thus upon the land surface of Michigan there will annually be about 8,000,000,000 insects destroyed by the Chickadees alone. Surely no mean number.

During the summer after the young have been reared, the number of individuals should be for some time at least tripled, giving us 20 to 25 per square mile. The census of 1890 shows that there are about 8,500,000 apple trees planted in Michigan, and of the fruit trees, apple orchards are the Chickadee's favorite haunt. This would give an average of about 150 trees per square

mile — enough for four ordinary sized orchards — or the average conditions existing in the better part of the State. As the worst period of insect attack is during and after the breeding season, this would allow six birds to each orchard.

Nineteen Chickadees contained a total of 830 insect forms, a large majority of which were noxious, and the remainder of a doubtful character as regards their value. Thus the Chickadees which it would be possible to secure in a fair sized orchard, a half-dozen, would consume at least 275 forms a day, but probably 350 would be a much fairer estimate, as the larvæ are quite rapidly digested and many were so finely divided as to render numerous individuals wholly indistinguishable. Now if these birds could be persuaded to nest here and rear their young, which would probably average five in number, 1200 insects would be required per day to feed the young and old birds. Professor Forbush states that 5000 canker-worms will strip a *large* apple tree. Thus the number of insects eaten would be sufficient to prevent the defoliation of a *large* tree every four days, and young trees in proportion, with no expense whatever to the farmer for labor or insecticides. Of course these compilations are largely of a speculative character, as unfortunately we have but few experiments and little accurate data, but they cannot but be highly suggestive.

Value of Winter Residence.

But this fails to take into account the large number of eggs eaten in the winter, from which the larvæ, when hatched, might be impossible to destroy — as shown by the observations of Prof. Forbush cited above. Again, the destruction of adult insects and larvæ during the winter is far more valuable than later, because they are mostly the ones which lay the eggs in the spring and thus keep up the life cycle. There are but few other birds present here in winter to perform this work, and these two birds also secure their food from places where no other birds present at that time of year would search for it. In this they form a well balanced couple, the Nuthatch securing his food from the rough bark of the main trunk while the Chickadee pecks away at

the small buds and joints, loose bark, etc., of the smaller, smooth limbs. In addition, it can be said in favor of both these birds that they are inclined to remain in one vicinity and do not wander far from it, but steadily and thoroughly work over one feeding ground.

Possibility and Desirableness of Partial Domestication.

Both these birds are very easily approached, and may readily be lured to orchards or shade trees, — they are quite common upon the shade trees of Lansing and, as stated before, are very tame on the campus.

It is, then, self-evident, that by every means they should be encouraged, by placing food for them till they become at home, by erecting suitable nesting sites, and by careful protection, to feed and nest in the orchards. It might be interesting to try the experiment of destroying as many old Woodpecker holes as possible and by placing suitable nesting sites in the orchard to thus entice them. Yet, in general, the old holes in which they nest should not be all cut out when securing fire wood, but a sufficient number be allowed to remain. If the farmer will take a very little time now and then in thus attracting these feathered insect-destroyers to his orchard, he will soon find very little if any need for insecticides except for extraordinary attacks. "An ounce of prevention is worth a pound of cure" is truly more applicable to the destruction of insect life than to almost any other phenomena.

NOTES ON CERTAIN SPECIES OF MEXICAN BIRDS.

BY E. W. NELSON.

THE WORK done on Mexican birds for the Biological Survey of the U. S. Department of Agriculture has added to the previously known range of many species and furnishes material for elucidating the relationships of others.

In order to render some of this information available to those interested I have prepared the following notes. In connection with the extension of the range of various species previously unknown north of Guatemala it may be stated that the highlands of Chiapas are a continuation of the elevated interior of the former country. The climate and vegetation of the two districts are essentially the same, and they are so much alike in general character that an equally close similarity is to be expected in the bird life.

Oreophasis derbianus *Gray.* — We found this magnificent bird in the heavy forest on the west base of the Volcano of Santa Maria, near Quezaltenango, Guatemala, and again in the similar forests below Pinabete, Chiapas. Previously it has been recorded, I believe, only from the Volcano de Fuego, Guatemala.

Penelopina nigra (*Fras.*). — This beautiful species was not uncommon in the dense forest at Tumbala, Chiapas. Like the preceding species it was known previously only from Guatemala.

Pharomacrus mocinno *De La Llave.* — A pair of Quetzals was seen near Tumbala, in eastern Chiapas, where they were reported to be resident in small numbers. I heard of them again in the mountain forests east of Tuxtla, Chiapas.

Sittasomus sylvioides *Lafr.* — A single specimen was taken on March 17, 1897, at San Sebastian in western Jalisco, where it was very uncommon. This is its first record for northwestern Mexico.

Pachyrhamphus major (*Cab.*). — A single specimen was obtained by us at Plomosas, Sinaloa, July 14, 1897, and adds the species to the fauna of this part of Mexico.

Pyrgisoma rubricatum xantusi (*Lawr.*). — *Pyrgisoma xantusi* was described by Mr. Lawrence (Ann. Lyc. N. Y., VIII, 480, 1866) from a specimen taken by Xantus in the mountains of Colima. The type is in the National Museum and agrees with a large series of specimens from various localities between Colima and Mazatlan in western Mexico. These birds are distinguished from those found in southern Puebla, supposed to be typical, by their decidedly larger size and much browner colors. The difference is sufficient to distinguish them from the typical form as a well marked geographical race. I have specimens of *P. r. xantusi* before me from the States of Colima, Jalisco, Sinaloa and the Territory of Tepic.

The general resemblance is so close between the figure of *Pyrgisoma kieneri* Bp., in the 'Exotic Ornithology' (p. 130, pl. 65), and some of the larger specimens of *Pyrgisoma rubricatum xantusi* that it leads me to have a strong suspicion of their identity. *Pyrgisoma kieneri* was published in a signature of the 'Conspectus Avium' (I, p. 486), dated July 20,

1850, and thus has priority over *Atlapetes rubricatus* Cabanis, published in a signature of the 'Museum Heineanum' (I, p. 140) dated May, 1851. Should my surmise regarding the identity of these birds prove to be well founded then *P. rubricatum* becomes a geographical race of *P. kieneri* and *P. rubricatum xantusi* is a pure synonym of *P. kieneri*. In his description of the latter bird Bonaparte gives its habitat as western America.

Pipilo maculatus *Sw.* — In our collection from Mt. Orizaba, Puebla, and the surrounding region are numerous specimens representing both sexes of *Pipilo maculatus* Sw. The females in this series are typical representatives of *Pipilo orizabæ* Cox (Auk, 1894, p. 161), which was described from a summer bird in worn plumage erroneously labeled male. The evidence furnished by a careful comparison of the type with our series is conclusive that *P. orizabæ* is based upon a wrongly sexed specimen of *P. maculatus* and it becomes, in consequence, a synonym of the last named species.

Arremonops rufivirgata sumichrasti (*Sharpe*). — *Embernagra sumichrasti* Sharpe, Cat. Bds. Brit. Mus., XII, p. 762 (in text), 1888.

Specimens before me from the west coast of Mexico show that Sharpe's bird is a well marked geographical race of *Arremonops rufivirgata*. It ranges from the border of Chiapas north along the west coast of Mexico to the State of Colima.

Arremonops chloronota *Salvin.* — We obtained this species at Yajalon in eastern Chiapas, thus adding it to the fauna of Mexico.

Chlorospingus postocularis *Cab.* — The type of this species came from Guatemala, and I find that my *C. atriceps* (Auk, Jan. 1897, p. 65), from Pinabete, Chiapas, is too closely related to it to be separated. The latter becomes in consequence a synonym of *C. postocularis*, the range of which extends through the mountains of southwestern Guatemala and Chiapas.

Chlorospingus olivaceus (*Bp*). — Not uncommon in the dense forest at Tumbala, Chiapas.

Piranga bidentata *Swainson*, and **Piranga sanguinolenta** *Lafresnaye*. — Recent writers agree in considering Lafresnaye's *Piranga sanguinolenta* a synonym of Swainson's *Piranga bidentata*. But the collections of birds made in Mexico for the United States Department of Agriculture, contain material which, studied in connection with the specimens in the U. S. National Museum, appears to prove the specific distinctness of these birds. The misapprehension of their true relationship appears to have arisen from the rarity of *P. bidentata* in collections, whereas specimens of *P. sanguinolenta* have been common. The two species once confounded, the error has been perpetuated through lack of material for their proper discrimination.

Piranga bidentata was described by Swainson in the 'Philosophical Magazine' for 1827 (p. 428) from a specimen taken by Bullock at Temascaltepec, Mexico. It was said to be "golden on head, neck and under-

parts," and this description applies to the Tanagers inhabiting the arid tropical mountain slopes of southwestern Mexico only including the Tres Marias Islands. Temascaltepec is situated southwest of the City of Mexico, on the Pacific slope of the main Cordillera.

Piranga sanguinolenta was described by Lafresnaye in the 'Revue Zoologique' for 1839 (p. 97) as coming from 'Mexico.' It was said to have the head and neck blood red with the lower surface of body cinnibar red. Tanagers with this style of coloration inhabit the humid tropical region of Vera Cruz and range thence south through tropical Guatemala and other parts of Central America to Chiriqui. During my field work in Mexico I have found each of these birds restricted to a definite faunal region, and apparently without intergrading, although further work may prove them to be geographical races of the same species.

The most striking difference between the males is the distinctly orange shade of *bidentata* contrasted with the rosy-scarlet or red shade of *sanguinolenta*. The two may be distinguished by the following descriptions:

Piranga bidentata. — Adult male: Head, neck and lower parts, including under tail-coverts, rich cadmium orange, with a richer or more reddish shade on crown, throat and breast; flanks duller or more brownish; feathers of back blackish brown edged with dark orange, and sometimes greenish yellow; rump ochraceous brown; wings and tail blackish brown; greater and lesser wing-coverts tipped with white spots, forming two well defined white wing-bands; outer pair of tail-feathers tipped with white for about one-third of length, mainly along inner web. Three adult males from Jalisco and Sinaloa average as follows: Wing, 98; tail, 79.3; culmen, 17.3; tarsus, 21.1.[1]

Adult female: The cadmium orange area of male is replaced by greenish yellow with a faint orange wash on breast. Back, wings and tail grayish brown; rump brown, washed with dark greenish yellow; outer tail-feathers with white tips much smaller than on males, occupying only about the terminal fifth of inner web.

Piranga sanguinolenta. — Adult male: Head, neck and lower part orange vermilion, becoming intense, flaming rosy scarlet on many specimens; back and rump brownish, heavily shaded with the general red color; wings and tail blackish brown; two conspicuous white wing-bands formed by white tips to greater and lesser wing-coverts; outer web of tertials white-spotted at tips; outer pair of tail-feathers tipped with white spots about as in *P. bidentata flammea*. Four adult males average as follows: Wing, 97.2; tail, 79.7; culmen, 16.2; tarsus, 21.4.

Comparing the measurements of the two species it will be noted that *sanguinolenta* has a smaller bill and proportionately longer tarsus. The females of the two species are more nearly alike than the males, but those of *sanguinolenta* may be distinguished by their more intense coloration and the small amount of white on the outer tail-feathers.

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[1] All measurements are in millimeters.

The synonomy of *Piranga bidentata* should stand as follows:

Pyranga bidentata Sw. Phil. Mag. 1827, p. 428; SCL. P. Z. S. 1856, p. 126 (part); 1857, p. 205 (part); 1859, p. 364 (part); *Ibid.* Syn. Av. Tan. p. 50 (part); *Ibid.* Cat. Am. Bds. p. 82 (part); SCL. and SALVIN, Nomencl. p. 82 (part); FINSCH, Abh. Nat. Ver. z. Bremen, II, p. 388 (N. W. Mexico); RIDGW. Man. N. Am. Bds. 1887, p. 456 (part).

The synonomy of *Piranga sanguinolenta* is as follows:

Pyranga sanguinolenta LAFR. Rev. Zool. 1839, p. 97; BP. Consp. I, p. 241 (1850).

Pyranga bidentata SCL. P. Z. S. 1856, p. 126 (part — Jalapa); 1857, p. 205; 1859, p. 364; *Ibid.* Syn. Av. Tan. p. 50 (part); *Ibid.* Cat. Am. Bds. p. 82, (part); SCL. and SALVIN, Ibis, 1860, p. 32 (Guatemala); *Ibid.* Nomencl, p. 82 (part); CASSIN, Proc. Ac. Sci. Phil. 1865, p. 171 (Costa Rica); SALVIN, P. Z. S. 1870, p. 187 (Chiriqui); LAWR. Ann. Lyc. N. Y. IX, p. 99 (Costa Rica); SUMICHR. Mem. Boston Soc. N. H., I, p. 549 (Vera Cruz); FRANTZIUS, Journ. f. Orn. 1869, p. 299 (Costa Rica); SALVIN and GODMAN, Biol. Cent.-Am. Aves, I, p. 296 (part — all east Mexican and Central American references); RIDGWAY, Man. N. Am. Birds, p. 456 1887. (part); CHAPM. Bull. Am. Mus. Nat. Hist. X, p. 27 (Feb. 1898.)

Ph [*œnicosoma*] *bidentata* CABANIS, Mus. Hein. I, p. 24. (1850?)

Compsothlypis inornatus (Bd.). — Common in the high forests of eastern Chiapas, near Tuxtla Gutierrez.

Dendroica decora (*Ridgw.*). — Specimens were taken by us near Tonala, Chiapas, and at Santo Domingo, Oaxaca, on the Isthmus of Tehuantepec.

Setophaga miniata flammea (*Kaup*). — Common in the highland forests of Chiapas.

Setophaga picta guatemalæ *Sharpe.* — Not uncommon in pine forests of interior Chiapas.

Ergaticus versicolor *Salv.* — Common on the highlands of central Chiapas.

Basileuterus culicivorus (*Licht.*). — Not uncommon in the mountains of western Jalisco where we took specimens near San Sebastian. We found it also at Pluma in western Oaxaca.

Basileuterus belli (*Gir.*). — Common in the mountains of western Mexico. We took specimens near Chilpancingo, Guerrero, and at San Sebastian, Jalisco These records add the two last named species to the fauna of western Mexico.

Mimus gracilis lawrencei (*Ridgw.*). — We found *Mimus gracilis* ranging over all the open parts of the interior of Chiapas and thence down to the Pacific coast, where in the region about the Isthmus of Tehuantepec, it merges into *Mimus lawrencei*. *M. gracilis* also ranges along the east

coast of Mexico from Yucatan to the Isthmus. Specimens from the vicinity of Coatzacoalcos, Vera Cruz, are intermediate between *gracilis* and *lawrencei*. From the foregoing it becomes evident that *M. lawrencei* is merely a geographical race of *M. gracilis*.

Heleodytes gularis (*Scl.*).—The collection made by us during 1897 contains several specimens of this bird from the mountains of southern Sinaloa and the western slope of the Nayarit Mts. in the Territory of Tepic. The surmise of the authors of 'Biologia,' based on the make up of the skin, that the type came from Floresi probably gives the true source of this specimen. Floresi lived for years at Bolaños, Jalisco, on the eastern side of the Nayarit range, whence he obtained various species of birds, and Bolaños is, no doubt, the type locality of the present species.

On comparing the type of my *Heleodytes occidentalis* with the specimens taken in Sinaloa and Tepic I find that it is the same bird and must stand as a synonym of *H. gularis*. As the type of *H. occidentalis* came from the Sierra Nevada de Colima, Jalisco, and Salvin and Godman have recorded the capture of *H. gularis* in the mountains of Sonora it gives this species a wide range in northwestern Mexico.

Catherpes mexicanus albifrons (*Gir.*). *Certhia albifrons* Giraud, Sixteen Sp. Tex. Bds. t. 18, 1841.

The Cañon Wrens of the lower Rio Grande Valley and northeastern Mexico are readily separable from typical *C. mexicanus* which occupies the Mexican tableland. As Giraud's *Certhia albifrons* was presumably from the southern part of Texas his name becomes applicable to distinguish the bird of this region subspecifically from typical *mexicanus*. *C. mexicanus albifrons* is found along the lower Rio Grande, in Texas, and in the States of Nuevo Leon and Tamaulipas, Mexico. Thence southward over the tableland, to the Isthmus of Tehuantepec, typical *mexicanus* is the resident form.

Parus sclateri *Kleins.* (J. f. O. XLV, 133 (in text) 1897).—The specific term *meridionalis* being preoccupied for an Old World species, as noted by Kleinschmidt (loc. cit.) the latter author proposes the name *sclateri* to replace it for the Mexican Chickadee.

Regulus satrapa oblivaceus *Bd. Regulus satrapa aztecus* RIDG. (ex Lawr. Mss.) Man. Bds. N. Am. p. 612 (appendix) 1887.

An examination of the material at hand proves that Mr. Lawrence's '*R. s. aztecus*' was based on a winter specimen of *R. s. olivaceus*.

Polioptila cœrulea mexicana (*Bp.*). LITTLE BLUE GRAY GNATCATCHER. *Culicivora mexicana* BP. Consp. Av. I, p. 315 (1850).

In 1850 Bonaparte named a Gnatcatcher from Mexico which he described as being similar to *cærulea* but smaller. This name has been treated as a synonym of the latter species by all recent writers. Our work in the lowlands of Vera Cruz, during the spring of 1894, revealed the presence of a small resident race of *P. cærulea* which is undoubtedly Bonaparte's bird and worthy of recognition with subspecific rank.

Distribution. — Coast lowlands of Vera Cruz, south to eastern Chiapas and perhaps Yucatan.

Description. — Similar to *P. cærulea* from which it differs in generally smaller size, proportionately longer bill, and the tendency to obsolescence of black border to forehead in breeding male. An autumnal male from eastern Chiapas lacks the black on forhead and has a large white tip on 4th pair of rectrices. The breeding birds from Vera Cruz have the white confined to the first 3 pairs of rectrices.

Average measurements of *P. cærulea* from the eastern United States:

Ad. ♂ (5 specimens): wing, 53.4; tail, 50.2; culmen, 10.7; tarsus, 17.5.

Ad. ♀ (5 specimens): wing, 51.6; tail, 51; culmen, 10.3; tarsus, 17.8.

Averages of *P. c. mexicana* from lowlands of Vera Cruz and Yajalon, Chiapas.

Ad. ♂ (5 specimens): wing, 49.8; tail, 47.2; culmen, 10.6; tarsus, 16.6

Ad. ♀ (2 specimens): wing, 47.5; tail, 45; culmen, 10.5; tarsus, 16.5.

Catharus frantzii alticola (SALV. & GODM.) — The specimens before me appear to prove that *Catharus alticola* is entitled to rank as a geographical race only and its relationship is expressed in the name given above. We took specimens of it on the Volcano of Santa Maria, Guatemala, and at Pinabete, Chiapas, thus adding it to the fauna of Mexico.

Merula leucauchen SCL. — This bird occurs northward from Guatemala at least to the Isthmus of Tehuantepec. In this latter district we obtained specimens near Santo Domingo, Oaxaca. Although recent authors have treated *M. leucauchen* as a synonym of *M. tristis* the bird is certainly distinct. It may be only a subspecies of *tristis* but the specimens at hand appear to indicate its specific distinctness.

Merula plebeius (*Cab.*). — We took specimens of this species at Pinabete, Chiapas, where it was rather common. Until we obtained the present specimens it was unknown north of Costa Rica. The birds from Chiapas are not typical and may represent a geographical race of the Costa Rican bird.

Sialia sialis guatemalæ *Ridgw.* — Common on the highlands of Chiapas.

BREEDING HABITS OF THE AMERICAN ROBIN (*MERULA MIGRATORIA*) IN EASTERN MASSACHUSETTS.

BY REGINALD HEBER HOWE, JR.

ARRIVAL AND DATES OF NESTING.

THE arrival of migrant male Robins in Eastern Massachusetts occurs early in March, the females about a week later and generally by the fifteenth of the month they are to be seen in fair numbers in their old haunts. By the tenth of April nests are to be found under construction — these early builders as often, I think, choosing the bare crotch of a maple, as the more protected, both from weather and sight, branches of a spruce or pine. Throughout the rest of April and fully two thirds of May we may find nests under construction that are to hold the first brood. I am inclined to believe that the first arrivals are the early builders and that the birds that arrive in late March and early April are the birds we find nest constructing in early or mid May.

MATING.

For the same reason that I believe individual Crows and Blue Jays are resident in a locality, I believe that a pair of Robins that have nested in a certain tree or in a certain area are the identical birds that have done so for years. In other words, an ornithologist continually in the field in one bit of country year after year comes to know the general habits of certain common birds, their special ways and traits, and with a degree of certainty can assert that they are the same birds he sees the year round or that come to his locality yearly. For instance, I know of a pair of Robins that nested in a friend's garden three years in succession. Food was placed outside the dining room window during their first spring, of which they partook regularly. Each successive year they returned to the garden to breed, and on arrival would come to be fed at the window as they had been accustomed to do. The young were also brought by their parents

to be fed, but I have every reason to believe that it was the parent birds that returned each year and not a pair of which either the male or female were one of the young of the previous year. (See Auk, Vol. II, p. 304.) Thus I feel confident that a pair of Robins once mated remain so for a number of years until separated by injury or death. I can well imagine it to be within the range of possibility, that a pair of birds leaving their summer home could keep together, joining some flock made up of other pairs, and migrate and winter in company; in fact, I think for a pair to separate, whose love for each other is as strong as we know it to be, and to wander apart never to meet again, seems harder to believe than disbelieve.

The arrival of the males before the females can be explained by the male birds of the winter flock starting in advance of their less hardy mates (for winter records in the north of various species are almost always of male birds), to be followed by the females a week or so later when the weather is less severe; and it is probable that the more pronounced Robin courtships we see going on about us in the spring are the birds who lost their mates during the previous winter, remating, and the young of the year being wooed for the first time.

THE CHOOSING OF THE NEST SITE.

In my careful observing of Robins at the breeding season I have only once seen a pair choose a nest site. I chanced to be looking at a female Robin one day (1897) sitting in a crotch of a wild cherry tree when she flew to the ground and began chasing about a male, evidently her mate. In a minute they both flew to the crotch that she had just left and stood peering about; the male flew to the ground again in a few seconds and the female also flew, returning in a minute with the first few twigs that were to form the foundation of the nest. I believe the female chooses the site, as it is she who does the greater part of the building.

THE NEST SITE.

The Robin's nest is too common an object to every observer of bird life to waste space in describing its various situations. Suf-

fice it to say, I have found the nest from two to fifty feet elevation, and in almost every growth of tree common to this locality, as well as on buildings, and others in such places as old carriages, wood piles, etc.

CONSTRUCTION OF NEST.

Having watched a number of nests during construction, I have been able to determine a fair average of the time required, and other interesting points.

After the site has been chosen the building of a substantial foundation of twigs, grasses, string, etc., is begun; this finished, finer grasses are brought and the bird standing in the centre of the foundation draws them round. After the sides of the nest have been fairly well made the bird by turning around in the nest shapes it to the exact contour of its body, and by pushing its breast far down into the nest and raising the primaries, it presses the nest with the wrist of the wing into a compact and perfect mass. The next work is the plastering with mud; a rainy day is generally chosen for this work; the bird brings the mud in its bill and, placing it on the inside of the nest, flattens it into shape by exactly the methods just described. All that remains now is the lining, which is made of fine grasses and which adheres to the mud, making a substantial though not a particularly beautiful nest.

The average measurements of nest are; depth, outside, 3 inches; depth, inside, 2½ inches; breadth, outside, 6½ inches; breadth, inside, 4 inches.

The average period for construction is about six days — the longest period, fifteen days and the shortest, three days. The weather and whether the female is pressed to drop her eggs seem to be the chief explanation of the variation in time. Both sexes build, but the bulk of the work is done by the female. After a nest has been finished, there is often, in fact generally, a delay of from one to four days before laying.

LAYING AND INCUBATION.

As far as my observations go, one egg is laid each twenty-four hours until the complete set is finished which consists of from

two to four eggs (very rarely five in this locality); and if the weather is cold the bird often at once begins to set, that is, with the laying of the first egg. Otherwise, if the weather is mild, setting does not commence until the complete clutch is laid. The eggs are generally laid, I believe, between the hours of eleven P. M. and four A. M., but this is at least not always so. The average period of incubation is thirteen days, but a variation of nearly twenty-four hours is not very uncommon. The female incubates almost unassisted: the male, however, I have observed in a number of cases, upon the female leaving the nest, takes her place, sometimes on the edge of the nest, while at other times he settles himself upon the nest, somewhat awkwardly, but in no case have I ever seen a male sit for more than three minutes in succession. The female does not leave the nest at noon to feed, when the heat of the sun is the strongest, as one would suppose, but leaves the nest generally about nine to ten A. M. and five to six P. M. I have never observed the male feed the female while incubating.

CARE AND GROWTH OF THE YOUNG.

The young may all be hatched inside of twenty-four hours or during a space of three days; this is governed by whether the female begins to incubate at the completion of the clutch or, by reason of cold weather, at the laying of the first or second egg. As soon as the young are hatched both birds commence to supply them with food, the male doing his full share. For the first few days the young apparently do not need much nourishment only warmth, for the female leaves the nest but rarely during this period. The eyes of the young open on the sixth day, and from the third day on, the rapidity of feather growth is astounding. The parents are now kept busy from morn till eve supplying the wants of the young, the birds bringing food to the nest nearly twenty times per hour.

The method of keeping the nest clean from the excrement of the young is interesting. Each time the female comes to the nest with food she stands, after delivering the morsel, until one of the young, having elevated its hinder parts, excretes on the edge of the nest, when she stoops forward and apparently *swal-*

TABLE OF GROWTH OF YOUNG.[1]

No. of Bird	Days	1	2	3	4	5	6	7	8	9	10	11
1	Weight of young per day.		$\frac{4}{16}$ oz.	$\frac{8}{16}$ oz.	$\frac{3}{4}$ oz.	$1\frac{4}{4}$ oz.	$1\frac{5}{16}$ oz.	$1\frac{15}{16}$ oz.	2 oz.	2 oz.	$2\frac{1}{16}$ oz.	2 oz.
	Growth of wing per day.		.20			.90	1.10	1.70	2.18	2.50	2.60	2.75
2	Weight of young per day.		$\frac{4}{16}$ oz.	$\frac{8}{16}$ oz.	$\frac{3}{4}$ oz.	1 oz.	$1\frac{3}{16}$ oz.	$1\frac{14}{16}$ oz.	$2\frac{1}{16}$ oz.	$2\frac{1}{4}$ oz.	$2\frac{1}{4}$ oz.	$2\frac{5}{16}$ oz.
	Growth of wing per day.		.20			.90	1.10	1.82	2.04	2.10	2.25	2.34
3	Weight of young per day.		$\frac{4}{16}$ oz.	$\frac{8}{16}$ oz.	$\frac{3}{4}$ oz.	$1\frac{1}{8}$ oz.	$1\frac{5}{16}$ oz.	$1\frac{15}{16}$ oz.	2 oz.	2 oz.	$2\frac{1}{16}$ oz.	2 oz.
	Growth of wing per day.		.20			.90	1.10	1.78	2.12	2.25	2.55	2.72
	Weight of adult bird 3 oz. Length of wing of adult bird 5.30 hundredths.		Naked except for a few tufts of down.	Down appearing.			Eyes open, pin feathers appearing on tracts.		Fairly well feathered except on abdomen.	Marked increase in feather development.	Marked increase in feather development.	Body entirely feathered.

[1] Young not weighed or measured after eleventh day for fear of driving from nest.

lows[1] the excrement. I have also observed that at times she would not swallow the excrement but carry it in her bill from the nest. During the last few days the young are in the nest they spend most of their time preening themselves.

During the period the young are in the nest I have never observed the male to sit, but I know of a reported instance where a male was known to do so. The young rarely all leave the nest at once, under natural conditions, but the nest is empty generally about fourteen days after the young hatch; they remain, however, for over a week in the immediate neighborhood of the nest, cared for by their parents. Young birds in this locality may be seen on wing as early as May 15.

SECOND BROODS.

The second brood is never, as far as my observations go, raised from the same nest but from another constructed in the immediate vicinity of the former one. I have no evidence and do not believe that a third brood is ever raised, but not uncommonly, fresh eggs are to be found late in July and young birds late in August.

Nest No.	Period of Construction.	No. of Eggs.	Period of Incubation.	Period Young remain in Nest.	Entire Nesting Period.	Species of Tree Nest in.	Elevation of Nest.
1	15 days.	4	12 days 20 hrs.	15 days.	45 days.	Spruce.	20 feet.
2	3 "	deserted.	——	——	——	Woodbine, piazza.	8 "
3	3 "	2	13 days.	16 days.	38 days.	Spruce.	15 "
4	6 "	4	blown down.	——	——	Spruce.	12 "
5	8 "	3	13 days 5 hrs.	11 days.	36 days.	Cedar.	10 "
6	3 "	4	13 days.	15 "	35 "	Wild cherry.	22 "
7	——	3	13 days.	12 "	approx. 30 days.	Spruce.	13 "
8	——	1	taken.	——	——	Apple.	18 "
9	deserted.	—	——	——	——	Oak.	19 "
10	"	—	——	——	——	Elm.	20 "
11	4 days.	4	taken.	——	——	Oak.	18 "
Average.	6 days.	3	13 days.	14 days.	37 days.	——	16 feet.

[1] The bird may eject the excrement after flying to some distance from the nest.

THE TERNS OF MUSKEGET ISLAND, MASSACHUSETTS. PART IV.[1]

BY GEORGE H. MACKAY.

ALTHOUGH the readers of 'The Auk' may be by this time familiar with my subject, I am nevertheless tempted to risk being thought monotonous in again presenting for their perusal further matter similar in character to some of my previous articles. I do this for the reason that the occupants of the breeding resorts to which my data relate may at any time transfer themselves to other places where perhaps such observations cannot be easily taken. Civilization is continually encroaching upon and appropriating such places along the coast until there remain at the present time few localities adapted for such breeding resorts. My desire to record what observations I have made in view of the possibility of the birds leaving us, is my excuse for the present contribution.

The Muskeget Island Terns, *Sterna hirundo*, *Sterna paradisæa*, and *Sterna dougalli*, and the Laughing Gulls, *Larus atricilla*, under the protection extended to them by a few individuals for a series of years, have increased from small numbers at the beginning to colonies of magnificent proportions in 1896, at which time the Terns, *S. hirundo* and *S. dougalli*, were beyond estimate, while the Laughing Gulls had increased to a fairly good sized colony, after having virtually abandoned these waters. The Terns of Penikese Island had never until 1897 enjoyed an *entire* undisturbed breeding season, when I interested myself in their behalf. As a result the increase has been a subject of remark among people living in the vicinity. At both Muskeget and Penikese Islands the situation is precarious, inasmuch as the birds may be compelled at any time to seek new breeding grounds elsewhere. Life saving stations, fortifications, etc., located in their midst, are likely to prove disturbing factors.

I visited and remained on Muskeget Island July 3–5, 1897, and while there made, as has heretofore been my custom, an exhaus-

[1] Read before the Nuttall Ornithological Club, October 18, 1897.

tive examination of all the breeding grounds of the Terns and Laughing Gulls. I found on visiting Gravelly Island a considerable falling off from the status of June 26, 1896, in both nests and eggs; the occupants were also different, being now almost entirely Common Terns (*S. hirundo*), its former possessors, the Roseate Tern (*S. dougalli*) having to a large extent abandoned it, there being, by my estimate, not more than ten per cent. of the latter now nesting there. I endeavored for over an hour to procure a few specimens of Roseates having the basal half of the bill of a dark orange red, with legs and feet carmine. I have noted such flying about in numbers during former years, they being noticably abundant July 29, 1895; some of these birds had slaty, while others had white underparts. I failed in securing any, obtaining only one bird with the bill partially so colored.

I subjoin the following statement of nests and eggs noted here:

GRAVELLY ISLAND. JULY 3, 1897.

Terns.

128	nests with 1 egg each	128	
232	" " 2 eggs "	464	
51	" " 3 " "	153	
7	" " 4 " "	28	
0	" " 5 " "		
418		773	

5	nests with 1 egg and 1 chick	
2	" " 1 " " 2 chicks	
4	" " 2 eggs " 1 chick	
82	live chicks	
53	dead "	

Laughing Gulls.

5	nests with 1 egg and 1 chick in down,			10
4	" " 2 eggs " 1 " "			12
2	" " 1 egg " 2 chicks "			6
11				28

I have not before noted Laughing Gulls breeding here, although I have heard that they did so formerly. This year their nests were placed in the longest and thickest lodged beach grass, *Ammophila arundinacea*, and were consequently well concealed. These birds undoubtedly came from their former haunt, Muskeget Island proper, which place they abandoned this season.

On leaving Gravelly Island I rowed over and examined the

adjacent shoals, or more correctly speaking, pieces of the old south beach, which are now all that remains of the northwestern half, and which formerly served as a barrier on this side and protected Muskeget and contiguous islands from the fury of the ocean. It will be seen that the conditions here are constantly changing to a greater or less extent, and I would refer those of my readers who may be interested to know how this locality looked, as also Penikese Island, at the time of the American Revolution, to the 'Atlantic Neptune,' an atlas published for the use of the Royal Navy of Great Britain, by Samuel Holland, Esq., London, 1777, Vol. II, Part 2. I found no birds nesting, nor chicks, nor eggs on these pieces of beach. Attempts at incubation had been made, as shown by the remains of egg shells, some nearly whole, with a good sized hole towards the larger end. This orifice had the appearance of having been gnawed or pecked to obtain the contents. Everything indicated that these places had been abandoned by the birds.

My next stopping place was at South Point Island. Changes were also noticeable here, my check-list of eggs and nests showing five hundred less eggs, and nearly a hundred less nests than on June 26, 1896. I again tried, without success, to procure some of the Roseates with a deep orange colored bill. There was only a small number of Roseates nesting here, intermingled with the Common Terns and Laughing Gulls. These latter, about fifteen pairs, probably came from their old nesting place on Muskeget proper, they nesting here for the first time, in the thickest and tallest beach grass. This place was, until 1897, one of the strongholds of the Roseates, but this year these beautiful birds are not in evidence as formerly, a large part of the colony heretofore domiciled here having apparently abandoned these waters. I think there are more Common Terns breeding on South Point Island than in 1896, they having come, like their neighbors, the Laughing Gulls, from Muskeget proper, having, like them, also abandoned it. I also found here some empty egg shells of the Terns and one of a Laughing Gull which had holes apparently gnawed or pecked in them. The nests and eggs noted are as follows:

SOUTH POINT ISLAND, JULY 3, 1897.

Terns.

144	nests	with	1	egg	each,	144	5 nests with 1 egg & 1 chick in down
342	"	"	2	eggs	"	684	3 " " 1 " 2 chicks "
68	"	"	3	"	"	204	1 nest with 2 eggs and 1 chick "
9	"	"	4	"	"	36	1 " " no " 2 chicks "
0	"	"	5	"	"		103 live chicks in the down
563						1068	67 dead " " "

Laughing Gulls.

1	nest	with	1	egg	each,	1
4	nests	"	2	eggs	"	8
7	"	"	3	"	"	21
12						30

On South Point (of Muskeget Island proper), now united to South Point Island, I found very few eggs although the Terns used it as a nesting place. I observed no eggs this season but what were normal.

I visited Adams Island but, as heretofore, found no birds nesting on it. This island has been considerably reduced in size since the washing away of the south beach.

I surveyed Muskeget Island proper on July 4 and 5, 1897, with feelings of concern and regret, for great changes had taken place regarding the domiciled birds since last season, as I found that this great breeding resort of the Terns and Laughing Gulls had been practically abandoned, there being only a few Terns still nesting at the westernmost part of the island. The cause of this abandonment I attribute to the building of a new life saving station in the midst of their former breeding grounds on the northern side of the island, together with some minor causes. This particular area has been the stronghold of the Common Terns, where they congregated in thousands, as well as of the Laughing Gulls. I am of the opinion that a portion of these birds have re-located on some of the small adjoining islands, while others have apparently abandoned these waters. The comparatively small number of the Roseates remaining, in comparison with 1895 and 1896, together with the diminished aggregate of

Laughing Gulls, indicate that they must have departed elsewhere.

For the first time to my knowledge, or so far as I can learn from others, a small colony of Terns nested this season on the Dry Shoal (without vegetation) located about half a mile from the northwestern end of Nantucket Island; about one hundred eggs were noted there, but unfortunately a high course of tides swept over this shoal and carried away the eggs.

This season the Terns arrived at Muskeget in large flocks, thousands dropping from the sky when they were first observed, similar arrivals as I am informed, not having been before noted. Up to the night of May 2, 1897, no Terns or Laughing Gulls had been seen in the locality. Early on the morning of May 3, the Terns were in evidence in large numbers, estimated at one thousand; the wind had been easterly during the night. This is the earliest date of their arrival in Massachusetts of which I have any knowledge. At Penikese Island, the greater portion of the Terns left the island on September 1, 1897, the wind being southwest and the weather fine. On the 4th and 5th a total of one hundred and twenty-five Terns, nearly all of them young birds and not strong on the wing, were counted at three different points on the island. These continued to decrease until the 24th, and on the 25th not a Tern was visible in the neighborhood. The body of birds which departed on migration September 1 resembled a great cloud as they mounted into the air. The number of young birds was unusually large this season, larger than has been before noticed by Mr. Fred A. Homer, one of the owners of the island. This result is probably due to the protection which has been extended to them *throughout* the breeding season, a condition they have not before enjoyed, as far as I am aware. The writer avails of the present opportunity to express his acknowledgments of the considerate co-operation of the Messrs. Homer in bringing about such satisfactory results.

SOME NEW RACES OF BIRDS FROM EASTERN NORTH AMERICA.

BY OUTRAM BANGS.

A GREAT many of the common or conspicuous birds of eastern North America were for the first time brought to the light of science through Catesby's fine plates and careful descriptions, and a little later received binomial names from Linnæus, often based solely upon Catesby's magnificent work. The type locality of all these is southern South Carolina. It is with such species that I have principally to deal in the present paper, and it becomes often a matter of difficulty to determine whether the original name shall be restricted to the northern or the southern subspecies, as southern South Carolina is in many instances neutral ground; the greater differentiation of the species taking place both to the north and to the south,—that is in peninsular Florida, and again north of the lower Austral zone.

In nearly every instance a bird whose breeding range along the Atlantic tier of States extends over two or more of the principal faunal zones separates off into tenable subspecies in accordance with the zones which it covers. In a few cases three subspecies are recognized, as with the Hairy Woodpecker and the Purple Grackle; but usually the breeding range of a species is not extensive enough to admit of more than two valid geographical races.

The three life areas potent in modifying the birds of eastern North America are the Boreal, the Austral, and the Floridian,[1] though the minor divisions of these more important faunal areas often have an effect, though lesser, upon a species.

In studying the races of our eastern birds one must of course be sure one has breeding individuals, as migrants of many of the northern forms are found in winter associated with the southern

[1] I use this name for the Tropical belt of south Florida and lower part of lower Austral zone in Florida, as the range of the peninsular forms peculiar to Florida usually extends north beyond tropical limits.

forms in Florida and Georgia. Thus Bluebirds taken in northern Florida in winter are often individuals of the northern form, as are most of the Great-crested Flycatchers, and Kingbirds found there in early spring. With birds that are non-migratory, or whose wanderings extend over a limited area, one need be less careful in this particular; but even then it is better to compare only breeders. A rather interesting case in point was one I noticed at St. Mary's, Georgia, where, on the great salt marsh in early April, there were two lots of Seaside Finches. One was the dark colored breeding bird of the region, conspicuous in the drier short grassed parts of the marsh and the patches of rush, in full song and worn breeding plumage. The other consisted of northern birds, in winter plumage, songless, and skulking about the long grass at the edges of the creeks. The two lots kept as much removed as if they bore each other no relationship.

There are more races of eastern birds worthy of separation than are included in the present batch, but those I deal with here are such as have been particularly brought to my notice in work that I have done in the field during the last few years.

I have had ample material to work with and have been able to examine skins from nearly every place I have wished to see them from. Besides the comparatively small but carefully chosen collections Mr. W. W. Brown, Jr., and I have made in Georgia and Florida, in the last few years, I have had access to the private collection of William Brewster, Esq., and that of the Museum of Comparative Zoölogy, both containing enormous series of eastern birds from very many important localities. Gerrit S. Miller, Jr., Esq., has also sent me specimens from his collection that I particularly desired to see.

All measurements are in millimeters and were taken with dividers.

Haliæetus leucocephalus washingtoni (*Aud.*), subsp. rest.

WASHINGTON'S EAGLE.

Type locality, Henderson, Kentucky. *Subspecific characters.* Size much larger than *H. leucocephalus leucocephalus;* bill proportionately more slender; upper mandible more abruptly curved downwards at tip.

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.
H. washingtoni.	South Hancock, Maine.	19,805[1]	♀ ad.	606.3	279.4	94	70
H. leucocephalus.	Fort Myers, Fla.	44,245[1]	♀ ad.	541 5	238.3	91	66.6

(These measurements give but a faint idea of the actual differences in bulk of the two Eagles.)

REMARKS. — The Washington Eagle occupies the whole of northeastern North America north of the lower Austral zone. The southern Bald Eagle occurs only in the lower Austral zone (Fla., Ga., S. Car., La., etc.).

The two eastern races of the Bald Eagle were clearly seen by Baird, who, however, supposed *washingtoni* to be the more southern, while in reality it is the northern form. Since Baird's time *washingtoni* has sunk, wholly without cause, into synonymy. The peculiar scaling of the tarsus and foot of Audubon's figure was either an accident in drawing or was abnormal. Audubon's figure shows the character of bill of *washingtoni* admirably as does Catesby's that of the southern form, true *leucocephalus.*

No one familiar with these two birds in life can have failed to notice the great difference in size between them. The little fellows that breed in Florida and Georgia are often scarcely larger than Red-tailed Hawks and hardly need comparison with the magnificent Eagle of the north. There is also a difference in habits. The Florida Eagle is a noted Duck catcher, pouncing upon them in the water, and the appearance of an Eagle on the wing is enough to drive all the Ducks scuttling in every direction from a bay or creek that he is approaching.

The Washington Eagle never, so far as I know, attempts to catch a Duck, contenting himself with fish or carrion. The Ducks know this and allow him to pass over them as unnoticed as a

[1] Coll. of Wm. Brewster, Cambridge, Mass.

Fish Hawk. Mr. C. H. Townsend[1] has lately described the Sea Eagle of Alaska as a new subspecies. He made his comparisons wholly with true *leucocephalus*, entirely ignoring *washingtoni*. His bird is but slightly larger than *washingtoni*, though it may differ in some other characters enough to entitle it to stand as a subspecies.

Ceophlœus pileatus abieticola, subsp. nov. NORTHERN PILEATED WOODPECKER.

Type from Greenville, Maine, ♀ adult, No. 3008. Coll. of E. A. and O. Bangs, collected Nov. 7, 1895, by C. H. Goldthwaite.

Subspecific characters. Much larger than *Ceophlœus pileatus pileatus;* bill longer, of about the same breadth; tarsus longer; all the white markings more extensive; black color less sooty, more brownish or grayish black, feathers of sides more extensively tipped and barred with white.

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill at nostril.
C. pileatus.	Fort Myers, Florida.	44,155[3]	♂ ad.	224	149	32.8	48	16
" "	" " "	44,154	♀ ad.	221	144	33	42.6	15
C. abieticola.	Greenville, Maine.	(Type) 3,008[2]	♂ ad.	232	159.4	31	52.2	16
" "	Lake Umbagog, Maine.	11,986[3]	♀ ad.	228	161	32.2	52	14.8

REMARKS. — Linnæus based his *Picus pileatus* on Catesby and Kalm. Taking Catesby as the best authority, southern South Carolina must be considered the type locality of the species, and birds from this region are as extreme of the southern race as those from Florida. *C. pileatus abieticola* is still to be found in

[1] Proc. Biol. Soc. of Washington, Vol. XI, pp. 145–146, June 9, 1897.

[2] Coll. of Wm. Brewster.

[3] Coll. of E. A. and O. Bangs.

considerable numbers in the primeval forests of northeastern North America, from Massachusetts north, but is of course extirpated over much of its former habitat. I think it still, however, meets the range of *C. pileatus pileatus*, and specimens from the mountains of Virginia and West Virginia are very good intermediates, though nearer *abieticola* than typical *pileatus*.

Colaptes auratus luteus, subsp. nov. NORTHERN FLICKER.

Type from Watertown, Mass., ♂ adult, No. 830, Coll. of E. A. and O. Bangs. Collected May 2, 1879, by E. A. and O. Bangs.

Subspecific characters. Size larger than *C. auratus auratus;* bill proportionally shorter, straighter, less curved. Colors much paler throughout; the brown of back and gray of top of head several shades lighter; black bands on back narrower and less conspicuous; under parts more washed with yellow — much less black and white; shafts, etc., a much brighter yellow.

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill at nostril.
C. auratus.	Enterprise, Fla.	30,017 [2]	♂ ad.	145.	92.	27	35.	9.
" "	East Peninsula, opp. Micco, Fla.	3,014 [1]	♂ ad.	142.2	97.4	26	34.	8.6
" "	" " " " "	3,017	♀ ad.	148.	98.8	26	35.	9.
C. luteus.	Chatham, Canada.	41,835 [2]	♂ ad.	156.	104.	29	34.6	9.4
" "	" "	41,834	♀ ad.	154.	101.	28	32.	9.
" "	Watertown, Mass.	830 (Type)	♂ ad.	159.	105.	29	35.2	9.4

REMARKS. — Linnæus based his *Cuculus auratus* wholly upon Catesby. The bird from southern South Carolina I have not seen, but birds from McIntosh Co., Georgia, differ but little from Florida specimens. Specimens from northern North Carolina and Virginia are referable to subspecies *luteus*, which extends from thence northward to Canada.

The differences between the two eastern races of the Flicker were very clearly pointed out by Dr. Merriam as long ago as

[1] Coll. of E. A. and O. Bangs.

[2] Coll. of Wm. Brewster.

1874,[1] and it is the greatest wonder they have never been recognized by name till now.

Tyrannus tyrannus vexator, subsp. nov. FLORIDA KINGBIRD.

Type from Merrit's Island, Indian River, Florida, ♀ ad., No. 1780, Coll. of G. S. Miller, Jr., collected May 13, 1886, by C. J. Maynard.

Subspecific characters. Size of *T. tyrannus tyrannus*, bill very much broader; tarsus slightly shorter and stouter; color of back usually darker and not so gray. In *T. tyr. tyrannus* the top of head is black and back is dark gray. In *T. tyr. vexator* the whole back is but little lighter in color than the head, and there never is the marked contrast in the colors of head and back seen in *T. tyr. tyrannus*.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill at nostril.
T. tyrannus.	Wayland, Mass.	705[2]	♀ ad.	112.	83.2	18.	17.4	8.
T. vexator.	Merrit's Island, Fla.	1,780[3]	♀ ad.	112.4	79.	17.4	17.6	9.8

REMARKS. — The name of the eastern Kingbird is considered to date from Linnæus's Xth Edition. Linnæus, however, based his bird principally upon "The Tyrant" of Catesby. Catesby, while he may have included the eastern Kingbird in his account of "The Tyrant," figured under that name another species.

The first author who gave the eastern Kingbird unconfused with other species is, as far as I can assertain, Pennant, where in his 'Arctic Zoology,' on page 384, the "Place" is given as in New York and the date of arrival is said to be April. Pennant mentions the white-tipped tail and his description is clear and free from confusion with any other species.

[1] American Naturalist, Vol. VIII, p. 88, 1874.

[2] Coll. of E. A. and O. Bangs.

[3] Coll. of Gerrit S. Miller, Jr.

Gmelin, under *Lanius tyrannus*, refers to Pennant, but all his other references relate to either composite or underterminable species. It is therefore best to consider the type locality of the Kingbird to be New York.

The Florida form is easily recognized by its large bill, and is abundant in the breeding season throughout peninsular Florida. The northern bird, however, is extremely common in Florida in April, as it passes through on its spring migration, and one must wait till these northern migrants have gone and the birds that breed in Florida have begun nesting in order to be sure to get there only specimens of *T. tyrannus vexator.*

The birds that breed on Cumberland Island, Georgia, are extremes of the Florida form as are also breeding birds from other parts of Georgia. I have seen no surely breeding birds from South Carolina, but undoubtedly *vexator* is the form that does breed there.

Myiarchus crinitus boreus, subsp. nov. NORTHERN CRESTED FLYCATCHER.

Type from Scituate, Mass., ♂ ad. (one of a breeding pair), No. 713, Coll. of E. A. and O. Bangs, collected June 28, 1883, by E. A. and O. Bangs.

Subspecific characters. Size larger than *M. crinitus crinitus;* bill very much smaller; colors about the same.

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill at middle of nostril.
M. crinitus.	New Berlin, Fla.	3,001 [1]	♂ ad.	106	91	21	20	10.4
" "	Miami, Fla.	14,324 [2]	♂ ad.	101	90	22	20	10.2
M. boreus.	Scituate, Mass.	(Type) 713 [1]	♂ ad.	109	94	22	18.6	8.6

[1] Coll. of E. A. and O. Bangs.
[2] Coll. Museum of Comparative Zoölogy.

REMARKS. — Linnæus's *Turdus crinitus* is based wholly upon Catesby, and the type locality of the species is therefore southern South Carolina.

Breeding Crested Flycatchers from South Carolina and Georgia, though intergrades, are much nearer the southern extreme, and the northern form is the one to properly receive a new subspecific name.

In the north *M. crinitus boreus* is rare or of local distribution, although it reaches southern Canada. A good many pairs breed every year in the neighborhood of the town of Scituate, Massachusetts, for which reason I have selected that place for the type locality of the subspecies. It is also a regular, though somewhat local breeder in other parts of Massachusetts.

The principal character that separates *M. crinitus crinitus* and *M. crinitus boreus* is the different bill. This, however, is alone sufficient to always distinguish the two races, the enormous swollen bill of the birds that breed in Florida and Georgia being in marked contrast to the small slender bill of the bird of the northeastern United States.

Sitta pusilla caniceps, subsp. nov. FLORIDA BROWN-HEADED NUTHATCH.

Type from Clear Water, Hillsboro Co., Fla., ♀ ad., No. 3021, Coll. of E. A. and O. Bangs, collected March 25, 1874, by C. J. Maynard.

Subspecific characters. Size smaller than *S. pusilla pusilla;* bill larger; top of head much lighter brown, the feathers tipped and edged still

MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill.
S. pusilla.	Statesville, N. C.	3,019[1]	♀	64.	30.	13.4	13.	3.8
" "	" "	3,020	♀	66.8	32.	13.6	13.2	3.8
S. caniceps.	Clear Water, Fla.	3,021	♀	60.	27.4	13.	13.4	4.
" "	" " "	318	♀	61.	30.	12.6	13.6	4.

[1] Coll. of E. A. and O. Bangs.

lighter — often grayish;[1] loral and post-ocular streak dark brown, in marked contrast to color of top of head; white spot on nape usually less extensive; underparts slightly darker, more plumbeous.

REMARKS. — *Sitta pusilla caniceps* is wholly confined to peninsular Florida. Specimens from St. Mary's, Ga., are rather nearer the more northern subspecies, true *pusilla*, while the one skin I have examined from Screven Co., Ga., is true *pusilla*. The Florida form, though widely distributed over lower Florida, is not a very common bird anywhere, not nearly so common as true *pusilla* is in the Carolinas. I have examined a large number of skins from many localities, the southernmost of which are Miami on the east side and Clear Water on the west side of the peninsula.

Parus (Lophophanes) bicolor floridanus, subsp. nov.

FLORIDA TUFTED TITMOUSE.

Type from Clear Water, Hillsboro Co., Fla., ♂ adult, No. 3021, Coll. of E. A. and O. Bangs, collected March 29, 1874, by C. J. Maynard.

Subspecific characters. Size smaller than *P. bicolor bicolor*; tail shorter; bill larger; color of top of head and upper parts of neck duller — less ashy; crest much shorter.

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed Culmen.	Breadth of bill.
P. bicolor.	Salt Sulpher Springs, W. V.	344[2]	♂	82	70.6	20.4	10.8	4.6
" "	Statesville, N. C.	315	♂	82.2	71	21	10.4	4.4
" "	" "	317	♀	81.4	70	19.8	10.4	4.6
P. floridanus.	Clear Water, Fla.	3,021	♂	75	64.2	19.4	11.4	4.6
" "	Enterprise. Fla.	5,248[3]	♂	77	65	20.4	11.2	4.8

[1] This lighter tipping and edging to the feathers is apparently not due to fading or wearing; it gives a pale variegated appearance to top of head, very different from the clear brown seen in *S. pusilla pusilla*.

[2] Coll. of E. A. and O. Bangs.

[3] Coll. of Museum of Comparative Zoölogy.

REMARKS. — The geographic ranges of the two races of the Tufted Titmouse are the same as those of the Brown-headed Nuthatch. The Florida form is confined to the peninsula and intergrades with true *bicolor* in southeastern Georgia. Like the Nuthatch, it is not a very common bird.

Sialia sialis grata, subsp. nov. FLORIDA BLUEBIRD.

Type from Miami, Dade Co., Florida. No. 14258, ♂ ad., Coll. Museum of Comparative Zoölogy, Cambridge, Mass. Collected March 9, 1871, by Maynard & Henshaw.

Subspecific characters. — Size of *S. sialis sialis;* bill larger and stouter; tarsus and foot larger; color of upper parts clearer blue, less purple. In *Siala sialis sialis* about smalt blue, and in *S. sialis grata* about French blue.[1]

COMPARATIVE MEASUREMENTS.

Name.	Locality.	No.	Sex.	Wing.	Tail.	Tarsus.	Exposed culmen.	Breadth of bill at middle of nostril.
S. sialis.	Belmont, Mass.	226[2]	♂ ad.	101.	63	20.2	11.4	5.
" "	Brookline, Mass.	3,006	♂ ad.	101.2	65	20.6	11.6	5.
" "	" "	3,007	♀ ad.	98.	58	20.8	11.	4.6
S. grata.	Miami, Fla.	14,258[3]	♂ ad.	100.6	66	21.6	12.2	5.
" "	" "	14,247	♂ ad.	99.4	64	22.	12.4	5.4
" "	" "	14,265	♀ ad.	98.2	61	22.	13.	5.6

REMARKS. — Linnæus based his *Motacilla sialis* on Catesby and Edwards. Although Catesby mentions seeing Bluebirds in several places, Bermuda, Maryland, etc., we must of course assume that the bird he figured came from southern South Carolina.[4] The birds of this region, as also those that breed in east-

[1] These blues are hard to define exactly owing to the sheen of the feathers, and to the varying shades of the color when the skin is turned in different lights.

[2] Coll. of E. A. and O. Bangs.

[3] Coll. of Museum of Comparative Zoölogy.

[4] It is evident that Linnæus took his description wholly from Catesby's plate, perpetuating the error of coloring of Catesby's figure, in his discription.

ern Georgia, are intergrades, but those that I have seen are rather nearer the northern extreme than the Florida extreme, and I have therefore given the new name to the form inhabiting South Florida. Another reason that has induced me to do this is that the northern form never gets so far south as Miami in its winter migration while it is extremely common in winter in South Carolina; therefore the northern extreme can easily be got at the type locality of the species, while the Florida form stands apart by itself. The Museum of Comparative Zoölogy is fortunate in possessing a fine series, including both breeding and winter specimens of the Florida Bluebird, collected in 1871 by Messrs. Maynard and Henshaw, mostly at Miami — a point so far south that it represents the form in its extreme.

GENERAL NOTES.

Brünnich's Murre (*Uria lomvia*) **at Ottawa, Canada.** — On the 12th December, 1897, large numbers of this bird passed the city on the way South. The flight continued nearly the whole day. Quite a number of the birds were shot. — G. R. WHITE, *Ottawa, Ontario, Canada.*

Ross's Gull (*Rhodostethia rosea*) **on Bering Island.** — In my 'Ornith. Expl. Comm. Isls. and Kamtsch.' (1885), p. 315, I enumerated Ross's Gull among the birds of Kamchatka with some hesitation and without giving it a number since Saunders had queried the statement of Verreaux that the two specimens in the museum at Mayence actually came from that country. At the same time I pointed out that there was no improbability *per se* in the alleged locality being correct. I am now in position to affirm that this species occasionally straggles as far south on the Asiatic coast as Bering Island off the coast of Kamchatka. Last summer Mr. N. Grebnitski kindly presented me with a fully adult female of Ross's Gull obtained on Bering Island December 10, 1895. It is now in the U. S. National Museum, No. 162785. This is a very interesting addition to the avifauna of the Commander Islands. — LEONHARD STEJNEGER, *U. S. National Museum, Washington, D. C.*

The Scarlet Ibis — A Correction. — In 'The Auk,' XIV, 1897, p. 316, is a record by the present writer of the Scarlet Ibis taken in 1897 in the Arkansas Valley in Colorado. This was given on the authority of the

local taxidermist who mounted the birds. Further investigation shows that they are really the White-faced Glossy Ibis. — W. W. COOKE, *Ft. Collins, Col.*

Colinus virginianus in Peculiar Plumage. — A Bobwhite recently killed in the vicinity of Washington, and now in the possession of Mr. Blair Lee of this city, presents such an unusual appearance as to seem worthy of permanent record. All the dark rufous tints of the normal plumage are replaced by pale fawn color, the buffy shades by white or grayish white. The ground color of the rump and tail is almost pure gray, and the bird is very much paler and more grayish throughout than even *Colinus v. texanus*. None of the black markings, however, seem to have undergone change; and especially on the lower surface, scapulars and innermost secondaries, they are brought out in conspicuous contrast by the lightening of the background. The pattern of coloration appears to be perfectly preserved, the black jugular band being, however, somewhat broader and the black markings on the breast more numerous than in ordinary specimens. — HARRY C. OBERHOLSER, *Washington, D. C.*

The Passenger Pigeon (*Ectopistes migratorius*) **in Wisconsin and Nebraska.** — Our records of this species during the past few years have referred, in most instances, to very small flocks and generally to pairs or individuals. In 'The Auk' for July, 1897, I recorded a flock of some fifty Pigeons from southern Missouri, but such a number has been very unusual. It is now very gratifying to be able to record still larger numbers and I am indebted to Mr. A. Fugleberg of Oshkosh, Wis., for the following letter of information, under date of Sept. 1, 1897: "I live on the west shore of Lake Winnebago, Wis. About six o'clock on the morning of August 14, 1897, I saw a flock of Wild Pigeons flying over the bay from Fisherman's Point to Stony Beach, and I assure you it reminded me of old times, from 1855 to 1880, when Pigeons were plentiful every day. So I dropped my work and stood watching them. This flock was followed by six more flocks, each containing about thirty-five to eighty Pigeons, except the last which only contained seven. All these flocks passed over within half an hour. One flock of some fifty birds flew within gun shot of me, the others all the way from one hundred to three hundred yards from where I stood." Mr. Fugleberg is an old hunter and has had much experience with the Wild Pigeon. In a later letter dated Sept. 4, 1897, he writes: "On Sept. 2, 1897, I was hunting Prairie Chickens near Lake Butte des Morts, Wis., where I met a friend who told me that a few days previous he had seen a flock of some twenty-five Wild Pigeons and that they were the first he had seen for years." — This would appear as though these birds were instinctively working back to their old haunts, as the Winnebago region was once a favorite locality. We hope that Wisconsin will follow Michigan in making a close season on Wild

Pigeons for ten years, and thus give them a chance to multiply and perhaps regain, in a measure, their former abundance.

In 'Forest and Stream,' of Sept. 25, 1897, is a short notice of 'Wild Pigeons in Nebraska,' by 'W. F. R.' Through the kindness of the editor he placed me in correspondence with the observer, W. F. Rightmire, to whom I am indebted for the following details given in his letter of Nov. 5, 1897: "I was driving along the highway north of Cook, Johnson County, Nebraska, on August 17, 1897. I came to the timber skirting the head stream of the Nemaha River, a tract of some forty acres of woodland lying along the course of the stream, upon both banks of the same, and there feeding on the ground or perched upon the trees were the Passenger Pigeons I wrote the note about. The flock contained seventy-five to one hundred birds. I did not frighten them, but as I drove along the road the feeding birds flew up and joined the others, and as soon as I had passed by they returned to the ground and continued feeding. While I revisited the same locality, I failed to find the Pigeons. I am a native of Tompkins County, N. Y., and have often killed Wild Pigeons in their flights while a boy on the farm, helped to net them, and have hunted them in Pennsylvania, so that I readily knew the birds in question the moment I saw them." I will here take occasion to state that in my record of the Missouri flock (Auk, July, 1897, p. 316) the date on which they were seen (December 17, 1896) was, through error, omitted. — RUTHVEN DEANE, *Chicago, Ill.*

Geotrygon chrysia again at Key West. — The last record of the occurrence of the Key West Quail Dove in Florida was that by Mr. Scott (Auk, VII, No. 1, Jan., 1890, p. 90), of a male (now in my collection) taken by Mr. Atkins at Key West, September 15, 1889. During the past autumn Mr. Atkins secured two more specimens, which have also come into my possession. Both are females and both were taken on Key West, one by Thomas Moore, at Salt Pond Hammock, near the east end of the island, October 20, 1897, the other by James Moore, "quite near the town," November 12, 1897. They were shot on the ground in rather dense woods. Mr. Atkins received them in the flesh and skinned and sexed them. — WILLIAM BREWSTER, *Cambridge, Mass.*

The California Vulture in Santa Barbara Co., Cal. — On Feb. 21, 1898, the Zoölogical Department of Leland Stanford University received a specimen of *Pseudogryphus californianus*, in the flesh. It was presented by the collector, Mr. Holton Webb, who secured it at Lampoc, a small town near the coast, between the Santa Ynes Mts. and the Santa Ynes River, in Santa Barbara Co. The specimen is in excellent condition, and will make a fine specimen, though apparently not full grown, as it measures but 7 ft. 8 in. in extent. — ROBERT B. MCLAIN, *Stanford University, Cal.*

Occurrence of the Spotted Screech Owl (*Megascops aspersus*) in Arizona. — Mr. C. K. Worthen has sent me a pair of small Screech Owls which were taken in the Huachuca Mountains, Arizona, the male by Mr. R. Lusk August 10, 1891, the female (probably by the same collector) June 20, 1895. Both birds are adults, the female being in slightly worn breeding plumage while the male had nearly completed the midsummer moult, excepting about the head where the feathers are old, faded and very much worn.

These birds do not belong to any form which is known to have been hitherto found within the United States, but on comparing them with my type of *Megascops aspersus*[1] (female, Chihuahua, Mexico, May 6, 1884), I find that they resemble it very closely in general color and markings as well as in the presence of a well-marked fringe of bristles on the sides of the head. The ground coloring, however, is slightly grayer, especially on the upper parts, and the dark markings are rather less coarse and numerous. The Arizona birds are also smaller, the male having the wing 5.18 inches in length and the female 5.27, whereas the wing of the type measures 5.66 inches. These peculiarities may prove to be characteristic of all the birds which inhabit the Huachuca range, but for the present, at least, it seems safest to regard them as representing mere individual variation and to refer the Arizona specimens to *M. aspersus* which, as has been just implied, is quite new to our fauna. — WILLIAM BREWSTER, *Cambridge, Mass.*

Great Gray Owl (*Scotiaptex cinerea*) in Minnesota. — During the winter of 1896–97 I secured not less than five specimens of this immense Owl and know of one other capture, all in this (Aitkin) County.

The winter just past, 1897–98, was not so cold, nor was there much snow as in the previous winter; in fact, it was a remarkably open winter, with only occasional cold spells. This open season may account for the scarcity of the Owl, for I secured but one and know of two others captured.

My friend, Mr. G. G. Cantwell, in his 'List of Birds of Minnesota' (O. and O., Sept., 1890) records this species as a "rare winter visitor," but it may be seen from my records that this Owl may be considered as a fairly common winter visitor, at least in the wooded parts of the central and northern sections of the State.

It is interesting to note how small a body this species has in proportion to its length of body and extent of wing, compared with other large Owls, as may be seen by the following data, from a series of four specimens in my collection:

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[1] Originally described in 'The Auk,' Vol. V, No. 1, January, 1888, pp. 87 and 88 and figured in Vol. VIII, No. 4, October, 1891, of the same journal.

Coll. Albert Lano, ♀, length, 26.75; extent, 58.00; wing, 21.00; tail, 12.00; weight, 2 lbs. 14½ oz. Collected at Aitkin, Minn., Jan. 5, 1897.

Coll. Albert Lano, ♂, length, 26.00; extent, 57.00; wing, 21.00; tail, 12.50; weight, 2 lbs. 11 oz. Collected at Aitkin, Minn., Jan. 27, 1897.

Coll. Albert Lano, ♂, length, 25.00; extent, 55.00; wing, 21.00; tail, 12.00; weight, 1 lb. 15 oz. Testicles active, size of beans. Collected at Aitkin, Minn., March 3, 1897.

Coll. Albert Lano, ♀, length, 25.25; extent, 58.75; wing, 20.75; tail, 12.50; weight, 2 lbs. 14 oz. Ovaries active, size of No. 4 shot. Collected at Aitkin, Minn., Jan. 19, 1898. — ALBERT LANO, *Aitkin, Minn.*

Note on Speotyto cunicularia obscura Stephens. — Mr. Stephens described this subspecies of Burrowing Owl (*S. c. obscura*, Auk, XII, Oct. 1895, p. 372), from a single male from Upper Lake, Lake Co., California. This has since stood as a doubtful form. Through the kindness of Mr. A. W. Johnson I have been able to examine two male birds from the type locality. In coloration I cannot see that these birds differ from other Ground Owls from San Diego and Palo Alto Counties, California, and Washington. The measurements are fully as great as for birds from other localities. A table of measurements is here given. Mr. Richmond

Number.	Sex.	Locality.	Date.	Wing.	Tail.	Tarsus.
151,022	♀	Upper Lake, Lake Co.	May 29, 1894.	6.20	3.10	1.65
162,706	♂	" " "	Feb. 10, 1897.	6.96	3.64	1.92
162,707	♂	" " "	Mar. 27, 1897.	6.96	3.70	1.97
162,708	♂	Long Beach.	Aug. 15, 1894.	6.90	3.54	1.80
———[1]	♂	Tiburon.	Sept. 26, 1897.	6.80	3.50	1.90
———[2]	♂	Amador Co.	Jan. 26, 1896.	7.10	3.56	1.87
162,709	♀	Palo Alto.	Oct. 15, 1897.	6.78	3.44	1.60
3,155	♀	Pullman, Wash.	Apr. 7, 1894.	6.58	3.28	1.62

has kindly compared these birds with the type and says: "Two Owls from Upper Lake, Calif., the type locality of Mr. Stephens's *obscura*, differ in no way from the ordinary *Speotyto* of the West. The original specimen of *obscura*, obtained by Mr. Stephens, is a very small bird, differing in color, when compared with western specimens, only in the dusky face and head, where the feathers are apparently stained. The measurements of the type of *obscura*, taken by Mr. Stephens, are added to the table below. The specimen from Palo Alto is fully as dark as some specimens of *floridana*, but lacks the bars on the under wing-coverts peculiar to that and the West Indian forms." — R. C. MCGREGOR, *Palo Alto, Cal.*

[1] Coll. of H. B. Kaeding.

[2] Coll. of Leland Stanford Jr. University. The others belong to U. S. Nat. Mus.

Amazilia cerviniventris chalconota — A Correction. — The description of this new race, in the January number of 'The Auk,' contains an error, to which Dr. C. W. Richmond has kindly directed my attention. The type locality should have been given as *Brownsville*, Texas, instead of Beeville, Texas. Then on page 32, second line of 'Habitat' for *Bee County* read *Corpus Christi;* page 34, line 23, for *four* read *three;* line 25, same page, insert *and* before *Corpus Christi*, and omit *and Beeville*, together with all of the following sentence. An inadvertence may also be here corrected: on page 34, line 28, for *the State of*, read *central or southern;* since the statement in its present condition is contradictory to what has already been said on the previous page. — HARRY C. OBERHOLSER, *Washington, D. C.*

Lewis's Woodpecker Storing Acorns. — An interesting account has been furnished me by Mr. Manly Hardy of the storing of acorns by Lewis's Woodpecker, *Melanerpes torquatus*. The substance of Mr. Hardy's communication is as follows :

Sidney French, a relative of his, a lad of some sixteen years of age, while paying a visit in November, 1897, to Happy Cañon, about twenty miles southeast of Denver, Colorado, amused himself by watching the Woodpeckers. Seeing one enter a hole in a big cotton-wood tree, he climbed up to see why it did so, when he found in the hole a lot of acorns. He then examined several other holes in trees near by, the names of which were not familiar to him, and found these, too, stored with acorns. Some of the holes were half the length and about the diameter of his finger, and contained five or six acorns each, tightly wedged in; while others, three inches across and extending downward for six or eight inches, held much larger stores. It was evident that the birds brought the acorns to the holes and shelled them there before storing them, for the ground beneath was piled with the empty shells and the kernels that were packed away were mostly in quarters, some of them, however, being in halves. The acorns belonged to the scrub oak of that region and were small and rather sweet.

The boy's careful description of the birds indicated pretty clearly that they were Lewis's Woodpecker but this important point was definitely settled when he sent the head and some of the breast feathers of that species to Mr. Hardy.

Major Bendire in his 'Life Histories of North American Birds' (Part II, p. 119) says that Lewis's Woodpecker has been seen sticking mayflies in crevices of pines, but I can find no record of its storing acorns, while the fact that the acorns were shelled lends additional interest to the story. — WILLIAM BREWSTER, *Cambridge, Mass.*

Occurrence of Leconte's Sparrow (*Ammodramus lecontii*) at Ithaca, N. Y. — While searching the large marsh at the head of Cayuga Lake

for fall migrants, I succeeded in securing a specimen of Leconte's Sparrow. The bird was taken at the edge of the marsh, where a stream had washed up the mud, making a higher and drier bank, and where, in consequence, the grasses were thicker and less aquatic in character. The specimen I obtained was a young bird, in the first plumage after the nestling plumage, thus, in all probability, showing that it had been bred at no very great distance from where it was taken. The date of its capture was October 11, 1897. Further careful search, both on the same day, and for many days thereafter, failed to reveal any more of the species. — LOUIS AGASSIZ FUERTES, *Ithaca, N. Y.*

The Sea-side Sparrow on Cape Cod in Winter, and other Notes. — I have been asked to report the following interesting records. Mr. Henry B. Bigelow and Mr. George C. Shattuck while walking over the salt marsh on Sandy Neck, Barnstable, Mass., on February 9, 1898, started from the grass a single Sea-side Sparrow (*Ammodramus maritimus*). Mr. Bigelow shot the bird at once and found it to be apparently in perfect health and without any marks of any old injuries. The sexual regions being badly torn by the shot, determination of the sex was impossible.

This is the first record of the wintering of this species in New England to my knowledge, for the bird probably wintered, and the capture also suggests the idea that the bird probably bred during the past season. Besides Mr. E. Sturtevant's records of the occurrence of this species at Middletown, R. I. (Auk, Vol. XIV, pp. 219 and 322) in May and July, 1889, 1896, 1897, we have Mr. J. A. Farley's record of its breeding at Westport, Mass. (Auk, Vol. XIV, pp. 322). Do these records signify the increasing number of competent observers in the field or the movement northward of the species's range from southern Rhode Island to Massachusetts?

On the same day, February 7, two Scaup Ducks (*Aythya marila nearctica?*) came in to the decoys put in the harbor of Barnstable, and although neither of the birds were taken, Mr. Shattuck feels confident of their identity as he knows the bird well. The usual northern limit of the Scaup Duck's winter range is Long Island, N. Y. Mr. R. W. Hall, Assistant in Zoölogy at Harvard University, tells me that he saw in Roxbury (Boston), Mass., on December 27, 1895, on the banks of Jamaica Pond in the shrubbery, a female Chewink (*Pipilo erythrophthalmus*). This is the third winter record for Massachusetts for this species and the fourth for New England. — REGINALD HEBER HOWE, JR., *Longwood, Mass.*

Lincoln's Sparrow in New Brunswick. — On June 18, 1897, at Bright, York County, New Brunswick, my attention was attracted by a bird's song which reminded me both of the song of the Grass Finch and that of the American Goldfinch yet was different from either. The following day I returned to the same place with my gun and secured the singer,

which was later identified for me by Mr. Frank M. Chapman, to whom I sent it, as *Melospiza lincolni*.

This, I believe, is the first known instance of the occurrence of the species in New Brunswick. — WILLIE H. MOORE, *Scotch Lake, N. B.*

Rank of the Sage Sparrow. — On page 58 of the current volume of 'The Auk,' Mr. Joseph Grinnell states that he found *Amphispiza belli* and *Amphispiza belli nevadensis* inhabiting the same locality at the head of the Little Tujunga Cañon, Los Angeles County, California, in July, 1897. This area is on the western slope of the divide, though not more than ten miles from the Mohave Desert. Mr. Grinnell further states that he has never learned of any intermediate specimens between the two forms, and consequently argues that they are specifically distinct.

On the Death Valley Expedition in 1891, Mr. Frank Stephens collected a number of specimens on the eastern slope of the Sierras, opposite the south end of Owens Lake, which I reported as being intermediate in color and size (N. Am. Fauna, No. 7, p. 98).

Taking this into consideration and the fact that *Amphispiza b. nevadensis* had evidently wandered from their desert home, as Mr. Grinnell writes me they were fully fledged, I cannot agree with him that there is any reason for considering the two forms more than subspecifically distinct. — A. K. FISHER, *Washington, D. C.*

Wintering of the Towhee (*Pipilo erythrophthalmus*) at Rockaway Beach, L. I. — On the 29th of January, 1898, I made a collecting trip to Rockaway Beach in the hope of seeing some winter birds, as the weather had been very cold for several days, and on the day in question the air was full of flying snow. While passing through a small thicket of brambles I felt sure I heard the Towhee's note, and started in to investigate. Although he was exceedingly wild, I at length caught a glimpse of him, and by remaining quiet for some time eventually secured him. Later in the day, I found three more, all males, as was the one I shot. It is quite evident that this bird occasionally winters much further north than is generally supposed, as there are also records from Longwood, Mass., on Christmas, and Bedford, Mass., on Jan. 2 (Auk, July, 1896).

Mr. L. S. Foster informs me that he secured a specimen on Feb. 22, near Oradell, N. J. — HARRY WEBB FLOYD, *New York City.*

The Rose-breasted Grosbeak in California. — During a collecting trip last summer in northern California, Dr. C. H. Gilbert and a party of students secured some birds that were new to the fauna of the State. While at Meyer's, Humboldt Co., Cal., July 1, 1897, the attention of the party was attracted by a string of strange birds that had been shot sometime before and were already in the early stages of decomposition. Not being able to decide what the birds were, several heads were cut off,

brought back, and are now in the collection of the University. The heads are male and female of the well-known eastern species, *Zamelodia ludoviciana*. How they came here is unknown. The farmer upon whose place the specimens were found declared they were quite common about his orchard in spring and did considerable damage to cherries and other fruit. He has promised to send specimens to Dr. Gilbert this spring. — ROBERT B. MCLAIN, *Stanford University, Cal.*

The Philadelphia Vireo (*Vireo philadelphicus*). — I read with much interest the article on the Philadelphia Vireo by Dr. Jonathan Dwight, Jr., published recently in 'The Auk' (Vol. XIV, No. 3). It may interest many who have perused that article to know that I met with a pair of these birds and secured their nest within a short distance of Lansdowne Station, Ontario. This happened in June, 1895. I had never met with the species before, but knew of it as being an occasional summer visitant to the vicinity of Ottawa, Ont. The place where I met with the birds was a rough pasture with here and there a clump of young poplar trees on the drier ground, elsewhere there were wet boggy places of small extent grown up with alders, an occasional tamarack, and a great deal of the well known plant, *Spiræa salisifolia;* some of this latter growing to the unusual height of four or even five feet. It was in a spray of the latter that I discovered the nest on the 14th of June, 1895. In it were two Cowbird's eggs, and one of the Vireo's. I removed the Vireo's egg and one of the Cowbird's, which had the effect of causing the birds to desert, for I visited the place a few days later and saw nothing of them.

With regard to the nest (which I gave to Professor Jno. McCoun of Ottawa), it was scarcely so finished a structure as is the Red-eyed Vireo's. The outside was a little ragged, a few stalks of dried grass protruding. Though pensile, it was not so carefully finished off; the straggling nature of the shrub perhaps preventing this. A quantity of spider's webs, etc., completed the structure.

With regard to the egg, it was marked exactly like that of the Red-eye, Vireo but was smaller, and according to its size was rather more globular in shape.

My observation of the birds and their location agreed very nearly with Dr. Dwight's experience, and had he searched and watched the place persistently where on the 10th July, 1893, he noticed what he took to be a female scolding and ruffling her feathers, he would probably have found the nest. I was attracted to the nest I found by the anxiety of the birds; they scolded and were quite tame. I have not noticed the Red-eye act thus. They hopped from branch to branch of the neighboring alders incessantly; there were no high trees near by. I observed them through strong field glasses, and in describing the birds should say that

they were *decidedly* smaller than the Red-eye, more bulky in shape, with a somewhat shorter tail proportionately. The yellow shading of the breast was not very evident, but there was a tendency to a lighter shade, without being a definite mark, on the wings. The persistent scolding seems to be a marked characteristic, to which Dr. Dwight refers.

The nest was located near the extremity of a stem of spiræa, about four feet from the ground, in a place that is always wet, except in very dry seasons. In searching for another nest, like Dr. Dwight, I should not think of looking in large trees or even moderate sized ones. After locating the bird, I should search in damp places among willows (where Mr. Thompson found the nest in Manitoba), among growths of alders, and as in the case of the nest I found, among straggling growths of spiræa, etc. I do not think they will ever be found to build high up in maples or hickories like the Warbling Vireo, nor yet on high ground among second growth maples and birches as the Red-eye very frequently does, at least in this neighborhood, or even in dense woods. — C. J. Young, *Lansdowne, Ont.*

Cairns's Warbler (*Dendroica cærulescens cairnsi*) **in Georgia on Migration.** — So little is known of the Alleghaney Mountains Black-throated Blue Warbler away from its breeding ground that it seems worth while to record its capture in spring upon Cumberland Island, Georgia. The bird (No. 3013, Coll. of E. A. and O. Bangs) was taken by W. W. Brown, Jr., April 9, 1897, at the northern end of Cumberland Island. It is an extreme example of subspecies *cairnsi*, a male in unworn newly acquired spring plumage. The back is nearly wholly black. It shows a character not mentioned by Dr. Coues, but which seems on examination of the type in Mr. Brewster's collection to be a mark of the race — a very much greater amount of white upon the outer pair of tail-feathers. — Outram Bangs, *Boston, Mass.*

Carolina Wren at Lyme, Conn., in Winter. — On the morning of Dec. 17, 1897, I was surprised to see and hear a Carolina Wren (*Thryothorus ludovicianus*) sing his pleasing notes. As this is the first time I have seen the bird in Connecticut, this record may be of interest to readers of 'The Auk.' — Arthur W. Brockway, *Lyme, Conn.*

Long-billed Marsh Wren in New Brunswick. — A specimen of this bird (*Cistothorus palustris*) was taken by me on October 3, 1895, in a marsh near Fairville, a suburb of St. Johns, New Brunswick. This specimen was presented to Mr. John Brittain of the Provincial Normal School, who confirms my identification. Correspondence with members of the Natural History Society of St. John, develops the fact that there is no previous record of the capture of this species in New Brunswick. — Willie H. Moore, *Scotch Lake, N. B.*

Birds Nesting under Electric Arc-light Hoods. — The fact of the arc-light hoods being utilized for nesting purposes is common to most every city or town where this type of lamp is used. The House Sparrow (*Passer domesticus*) was no doubt the first bird to adopt them, and subsequently the Purple Martin (*Progne subis*); this is quite a common occurrence through southern New Jersey. But there yet remains another species, the fact of which may be new to ornithologists, which I observed at Atlantic City, N. J., about July, 1892.

The Friends' Meeting House, corner of South Carolina and Pacific Avenues, has been used as a breeding place by a colony of Barn Swallows (*Chelidon erythrogastra*) for a number of years, building their nests on top of the caps of the pilasters around the outside of the building. While watching their movements from the veranda of a cottage on the opposite side of the street, I noticed a Swallow fly out from under an arc-light hood which stood above the sidewalk. From the frequent trips to and fro, the nest I thus discovered no doubt contained young. — J. Harris Reed, *Beverly, N. J.*

The Use of Hornets' Nests by Birds. — Miss Elizabeth A. Simons of East Clifton, Delaware Co., Penn., has in her possession a large hornet's nest, which was taken from a pear tree, in the vicinity, by her brother. A neat hole had been excavated in its side, directly under the comb, about two and one half inches in diameter, with quite a good-sized cavity inside, which was bedded with slender fall-grasses and lined with body feathers from fowls. Upon inquiry they were not certain of its true occupants, but from a careful examination I would judge it to be a freshly built nest of the House Sparrow (*Passer domesticus*). It is to be regretted that it had not been found by a more careful observer.

This is the second occurrence of the use of hornets' nests by birds, which has come under the writer's notice, the other instance being a House Wren (Auk, Vol. VI, p. 339). — J. Harris Reed, *Beverly, N. J.*

Some Corrections. — In 'The Auk,' Vol. XII, pages 191 and 192, are some notes on Upper Peninsula Michigan Birds by the writer, which are here corrected.

The specimens of supposed Yellow-headed Blackbirds taken by me, have later been identified as "heavily marked fall specimens of the Rusty Blackbird, *Scolecophagus carolinus*," by Prof. W. B. Barrows. This does not affect the specimen taken by E. E. Brewster of Iron Mountain, Mich., which is a true *Xanthocephalus xanthocephalus*.

Also the Connecticut Warblers have been identified by Dr. C. Hart Merriam as *Geothlypis trichas*, which they very closely resembled in this the first fall plumage. — Oscar B. Warren, *Hibbing, St. Louis Co., Minn.*

Revival of the Sexual Passion in Birds in Autumn. — Under the above heading two short notes have already appeared in 'The Auk,' for January, 1886. The first (pp. 141, 142) is by Bradford Torrey who, on October 12, 1885, saw a pair of Bluebirds "toying with each other affectionately" and "once certainly . . . . in the attitude, if not in the act, of copulation," and he queries whether this may not account for the second period of song which many birds have. The other note (p. 286) is from Charles Keeler who noticed similar actions among some English Sparrows, which, in November and December, 1885, were even engaged in nest-building, the weather at the time being very mild.

To these observations it seems worth while to add the following account of an experience which I had at Lakeside, Coos County, New Hampshire (at the southern end of Lake Umbagog), a little more than a year ago. I quote from my journal of August 22, 1896.

At about sunrise this morning there were fully three hundred and fifty Swallows strung along on the wires of the fence in front of the hotel. I watched this flock for more than an hour (7 to 8 A. M.) and was amply repaid for the trouble. There had been a heavy rain during the night and the road was very muddy. The birds alighted about the edges of one of the larger puddles in great numbers and walked slowly about fluttering or quivering their half-opened wings like so many big butterflies. At first I supposed that they were drinking or picking up insects, but what was my astonishment to find that the Eave Swallows were filling their bills with mud, and the White-bellied and Bank Swallows gathering pieces of hay or straw. The Barn Swallows did not visit the pool in any numbers, and I did not happen to see them pick up anything. Each bird, on obtaining a satisfactory load of mud or grass, flew with it to the fence and after shifting it about in its bill for a few moments, finally dropped it and at once returned to the road for a fresh supply. From fifty to a hundred Swallows were thus constantly engaged for half-an-hour or more. Not one of them took its burden elsewhere than to the wire fence or retained it for more than two or three minutes after reaching its perch. What did it all mean? Two facts which remain to be recorded will, perhaps, explain.

The first is that, while the birds were clustered about the mud-puddle, scarce a minute passed when one or two pairs were not engaged in copulation. Perhaps I should say in attempted, rather than actual, copulation, for, as nearly as I could see, the sexual commerce was in no instance fully and successfully accomplished. The females (or at least the birds that acted that part) submitted willingly enough to, and in some instances, as I thought, actually solicited, the attentions of the males; the latter, however, displayed but mild sexual ardor and were very clumsy in their attempts at indulging it. Once I saw an Eave Swallow and a White-bellied Swallow in sexual contact.

The second fact apparently supplies the key to the whole mystery. It is simply that every one of the Swallows which visited the mud-puddle

and engaged in collecting mud and straw or in attempted copulation, *was a young bird!* Of this I made sure by the most careful scrutiny with a glass at a distance of only 15 or 20 feet. There were a few old birds in the flock, but they remained constantly on the fence.

It seems evident, therefore, that the remarkable behavior of the birds which alighted in the road was simply an expression of premature development, in the young, of the instincts and passions of nest-building and procreation. It is, however, the only instance of this kind that has ever come under my observation. — WILLIAM BREWSTER, *Cambridge, Mass.*

Remarkable Ornithological Occurrences in Nova Scotia. — LEAST BITTERN (**Botaurus exilis**). — On March 16, 1896, an adult male in full plumage was shot at Upper Prospect, Halifax County, N. S., and was brought to me for identification. This species has never before been taken in Nova Scotia and its occurrence is remarkable, particularly when we consider the early period of the year in which it was taken. It usually ranges only as far north as Massachusetts in the East, but stragglers have been taken in Maine and New Brunswick. In the latter Province some five individuals were killed between 1877 and 1881 on the Bay of Fundy coast.

LITTLE BLUE HERON (**Ardea cærulea**). — A male in adult plumage was killed at Lawrencetown, Halifax County, on March 18, 1896 — two days after the Least Bittern was shot. The bird was very thin. Another specimen, also an adult, was taken at Shut Harbour, N. S., on April 10, 1897. Only once previously has the species been collected in this Province. In the summer of 1884 an immature specimen was taken at Cole Harbour, near Halifax.

PURPLE GALLINULE (**Ionornis martinica**). — This species is an accidental visitor. In 1896 I saw an adult female which had been captured alive on Devil's Island, Halifax Harbour, about January 16 of that year. It had probably been injured by striking the lighthouse upon that island. After being kept alive for about twenty-five days, it died and was mounted. I am told that another of the same species was found dead at Chezzetcook, Halifax County, in the same week as that in which the before-mentioned specimen was taken. Previous to this, two specimens had been taken in the Province. One of these was shot near Halifax on January 30, 1870 (Jones, American Naturalist, IV, 253), and the other was captured alive in April, 1889, and was kept for some time in an aviary by the late Mr. Andrew Downs (*vide* Transactions N. S. Inst. Nat. Sc., VII, 468). It has been reported as casual in the neighboring Province of New Brunswick.

WILSON'S SNIPE (**Gallinago delicata**). — A partial albino was shot about October 11, 1894, at Canning, King's County.

LAPWING (**Vanellus vanellus**). — On March 17, 1897, one of these birds was found, dead, on the sandy shore of Ketch Harbour, near

Halifax. I examined the bird before it was skinned. Death had evidently been largely caused by starvation, as the body was very thin. The occurrence of this European bird upon our coast is most remarkable. It is perhaps doubtful if there is another well-authenticated record of the capture of the bird in temperate America, for Mr. Ridgway queries "Long Island" in the list of localities given in his 'Manual.' There cannot be the slightest doubt about the identification of the present specimen.

Black Vulture (**Catharista atrata**). — A Black Vulture was shot at Pugwash, Cumberland County, N. S., on January 12, 1896, and was brought to Halifax where I identified it. Mr. Chamberlain (Nuttall's Ornithology, 1891) states that it has been killed on Grand Manan in the Bay of Fundy. I think it has not been elsewhere met with in the Dominion of Canada. As in the case of the Least Bittern, the Little Blue Heron, the Gallinule, and the Lapwing, it will be observed that the present bird was taken at a very early period of the year.

American Crow (**Corvus americanus**). — An albinistic Crow was killed near Halifax on October 6, 1896. Its general colour was brown, darker on the throat, cheeks and belly; scapulars and feathers of back margined obscurely with whitish; primaries mostly whitish; tertials white; tail-feathers light reddish brown margined with whitish on outer edge; legs, bill and iris, brown.

Winter Wren (**Troglodytes hiemalis**). — My brother and myself found a nest of this species, containing a number of young, at Spryfield, near Halifax, on June 11, 1894. It was simply a cavity in moss, *in situ* upon the face of a rock close to the shore of a small lake. This moss *was constantly saturated with water* which trickled from a bank above and slowly flowed over the stone on which the moss grew. There is not the least doubt as to identification, for one of the parent birds was seen entering and leaving the exit several times. We were close alongside and could distinctly see the bird. In May, 1891, we found a nest of the same species only a couple of feet from the site of the one just mentioned. It precisely resembled the latter in form, construction and materials, as well as in being saturated with moisture. A full description of the nest of 1891, which contained a number of eggs, will be found in the 'Transactions' of the N. S. Institute of Science, VIII, 203. — Harry Piers, *Halifax, N. S.*

Occasional Visitants at San Geronimo (Nicasio Township), Marin Co., California. — Dryobates nuttallii. Nuttall's Woodpecker. — This bird is a common resident, though never numerous, about thirty miles north of this place, but only one specimen has been seen in this locality. This was a female taken Feb. 14, 1884.

Sphyrapicus varius nuchalis. Red-naped Sapsucker. — Two specimens taken in 1894 and one in 1897 — all three shot in the family orchard adjoining the house.

Melanerpes torquatus. LEWIS'S WOODPECKER. — This is an occasional visitor in the fall or winter. Some years two or three will appear, and other years none at all.

Dendroica nigrescens. BLACK-THROATED GRAY WARBLER. — One taken, a male, Sept. 18, 1897. Had never heard of one in Marin County before, and have seen none since.

Dendroica townsendii. TOWNSEND'S WARBLER. — The bird is of rare occurrence in this neighborhood, but almost every year two or three are taken.

Mimus polyglottos. MOCKINGBIRD. — One specimen, a male, was taken here by Mr. C. A. Allen on Dec. 30, 1894, and is now in our collection. There was no evidence of its having at any time been a caged bird.

Myadestes townsendii. — TOWNSEND'S SOLITAIRE. — On Feb. 14, 1880, while on top of our chaparral hills with Mr. C. A. Allen five or six of these birds were observed flying among some cedar trees. Three specimens were shot. Since then I have seen no more, although constantly on the lookout for them, until Dec. 20, 1897. Long-continued cold weather had led me to believe that there was a liability of a visit from some of these birds, and on this date I caught sight of one flying across a cañon. I was fortunate enough to locate it on top of a Douglas fir and to make the capture. It proved to be a male. Those shot in 1880 were 2 males and 1 female. — JOSEPH MAILLIARD, *San Geronimo, Marin Co., Cal.*

California Bird Notes. — On looking over my records for the past few years I find some items that may be of service in indicating the geographical distribution of the species mentioned.

Synthliboramphus antiquus. ANCIENT MURRELET. — In December, 1895, I obtained three females of this species on Monterey Bay, off Pacific Grove, and in January, 1896, three males and two females in the same locality. In the California Academy of Sciences there is a fine series of these birds from Monterey Bay, taken by Mr. L. M. Loomis in December, 1894, and January, 1895 (Proc. Cal. Acad. Nat. Sci. (2), VI, 1896, pp. 17–19.)

Brachyramphus hypoleucus. XANTUS'S MURRELET. — On Dec. 2, 1895, I obtained a male of this species on Monterey Bay, and on Jan. 17, 1896, a female. Also one, taken on this bay by Mr. L. M. Loomis, is in the California Academy of Sciences. (Proc. Cal. Acad. Sci. (2), V, 1895, p. 211.)

Puffinus tenuirostris. SLENDER-BILLED SHEARWATER. — On Dec. 17, 18, and 19, 1895, large bands of Shearwaters were feeding on Monterey Bay and out of the number that were taken fifteen proved to be of the above species. An immense flock of, presumably, *P. griseus* and *P. tenuirostris* followed a school of sardines close into shore on Dec. 20, contrary to their usual habits, but unfortunately the necessity of returning to my business affairs by the early train the following morning prevented me from taking advantage of this flight. Had I realized at

the moment their extreme rarity on this coast business matters would have been cast aside. Mr. A. W. Anthony of San Diego, on being notified by letter of the presence of this species succeeded in shooting several specimens off San Diego Bay. Since then Mr. L. M. Loomis has taken one specimen on Monterey Bay, and I believe this completes the record for this coast.

Cyanocephalus cyanocephalus. PIÑON JAY. — In December, 1895, a large flock of these birds located in the vicinity of Pacific Grove, Monterey Co., Cal. This flock made a tour of the town nearly every day that I was there, flying from one pine tree to another and sometimes alighting on the ground, but never staying in one spot more than a minute or two. The oldest inhabitants could not remember having seen these birds before nor having heard their peculiar cries. I succeeded in securing six specimens, all females. From what observations I could make during their restless movements I should say that the majority, if not all, of this flock were females.

Larus canus. MEW GULL. — There is in our collection an adult of this species taken upon San Francisco Bay, Cal., some years ago. Unfortunately, however, the label was accidentally torn off in moving the collection, and at that time no systematic record of specimens was kept. — JOSEPH MAILLIARD, *San Geronimo, Marin Co., Cal.*

RECENT LITERATURE.

'Audubon and His Journals.'[1] — In the brief space of 73 pages Miss Audubon has given the public for the first time a trustworthy biography of her illustrious grandfather, John James Laforest Audubon.[2] 'The Life of Audubon the Naturalist, edited by Mr. Robert Buchanan from

[1] Audubon and his | Journals | By | Maria R. Audubon | With Zoölogical and other Notes | by | Elliott Coues | Volume I [-II] | New York | Charles Scribner's Sons | 1897. — Two vols. 8vo, illustrated. Vol. I, pp. i–xiv, 1–532, 22 ill., mostly full-page photogravure; Vol. II, pp. i–viii, 1–554, 15 photogravure ill. and 9 facsimiles of diplomas. (Price, $7.50.)

[2] Doubtless the name Laforest is little known as a part of Audubon's name but in a footnote to p. 5 of the biography Miss Audubon gives the following quotation from a letter of Audubon to Mrs. Rathbone, written in 1827, and adds that all Mrs. Audubon's letters to her husband address him as Laforest: "My name is John James Laforest Audubon. The name Laforest I never sign except when writing to my wife, and she is the only being, since my father's death, who calls me by it."

material supplied by his Widow,' published in London in 1868 and republished in New York in 1869, with additions, and the omission of some objectionable passages, has been heretofore our principal authority on the life of the great artist-naturalist, but it is said to contain many errors in dates and names, and is otherwise very unsatisfactory.

Andubon was born in Mandeville, Parish of St. Tammany, Louisiana. The date of his birth remains in obscurity; it is usually given as May 5, 1780, though believed to be somewhat earlier. It was, however, during the time Louisiana was a Spanish colony, some twenty to twenty-five years before it became a part of the United States. Yet Audubon, in so often referring to himself in his European Journals as the American woodsman, is literally within the truth as regards the locality of his birthplace; and throughout his life all his interests and sympathies were centered in the United States, which eventually came to include the land of his birth, his "beloved Louisiana."

At an early age he, with his mother, went with his father to Santo Domingo, where the elder Audubon owned a large estate. Here his mother was soon after killed in a negro insurrection; the father and young Audubon, still a very young child, and some servants, escaped to New Orleans and thence went to France. Here Audubon lived for some years at Nantes, in the care of a fond stepmother, and later was put to school. He was not, however, especially studious. He says, "My father being mostly absent on duty [as a naval officer], my mother suffered me to do much as I pleased; it was therefore not to be wondered at that, instead of applying closely to my studies, I preferred associating with boys of my own age and disposition, who were more fond of going in search of birds' nests, fishing, or shooting, than of better studies.' Again, speaking of his school days, he says: "During all these years there existed within me a tendency to follow Nature in her walks. Perhaps not an hour of leisure was spent elsewhere than in woods and fields and to examine either the eggs, nest, young, or parents of any species of birds constituted my delight." When he was about eighteen years old his father found it necessary to send him back to his "own beloved country, the United States of America," and, he adds, "I came with intense and indescribable pleasure."

From this time, with the exception of a business trip to France while still a youth, and his later visits to Great Britain and the continent, he lived in the United States, for which, in all his wanderings, he manifested the greatest attachment.

The history of the first forty years of Audubon's life, as here given (pp. 7–38), is autobiographical, being from one of his journals;[1] it brings the account down to 1819, when he left Henderson, Kentucky. This is

[1] Reprinted from 'Scribner's Magazine,' for March, 1893, with some corrections.

supplemented (pp. 39–48) by extracts and much other information derived from some of his early journals, only two of which have escaped the ravages of fire.[1] The following thirty pages conclude this fascinating and all too briefly-told history of a career unusually varied and picturesque. This brevity is in large measure, however, compensated by the 'Journals' that compose the chief part of these two large volumes, through which Audubon's charming personal character is revealed in all its simplicity and loveliness. His many struggles with adverse conditions, his mercurial temperament and versatility, his womanly tenderness and kind regard for others, as well as his intense love of nature, stand forth prominently in the almost daily entries of passing events. The 'Journals,' besides giving an insight into the motives and character of the man, possess the charm of personal reminiscence and great historic interest, whether they relate to his sojourn in Edinburgh, London, and Paris, or to his various expeditions into then almost unexplored parts of this continent. The European Journals (I, pp. 79–342) cover the critical period (1826–29) of Audubon's visit to Edinburgh and London in search of subscribers to and a publisher for 'The Birds of America,' and introduce to the reader persons then prominent, not only in literature and art, but as naturalists and natural history publishers. Audubon was received everywhere with great cordiality, and formed many life-long friendships. The names of Lord Stanley (later Earl of Derby), the Rathbones, Traill, Roscoe, Jameson, Bewick, Children, Selby, Vigors, Sabine, Swainson, Nuttall, and others in England, and Cuvier in France, have either been given by Audubon to American birds, or are otherwise associated with their literary history. The Rathbones were his especial friends and greatly aided him in his canvass for subscribers and in securing the publication of his work. This portion of the 'Journals' abounds especially in passages it is hard to refrain from quoting, either from their revealing characteristic traits of Audubon himself, or as giving glimpses of many naturalists prominent in England during the first half of the present century.

The following brief extracts will serve to illustrate the cordiality of his reception and the general character of his Journals. He thus relates for example, his first meeting with Lord Stanley: "In the afternoon I drove with Mr. Hodgson to his cottage, and while chatting with his amiable wife the door opened to admit Lord Stanley. I have not the least doubt that if my head had been looked at, it would have been thought to be the body, globularly closed, of one of our largest porcupines; all my hair — and I have enough — stood straight on end, I am sure. He is tall, well formed, made for activity, simply but well dressed; he came to me at once, bowing to Mrs. Hodgson as he did so, and taking my hand in his, he said: 'Sir, I am glad to see you.' Not the words only, but his

[1] Destroyed in the 'Great Fire' that devastated New York city in 1835.

manner put me at once at my ease. My drawings were soon brought out. Lord Stanley is a great naturalist, and in an instant he was exclaiming over my work, 'Fine!' 'Beautiful!' and when I saw him on his knees, having spread my drawings on the floor, the better to compare them, I forgot he was Lord Stanley, I knew only he too loved Nature. . . . He cordially invited me to call on him in Grosvenor street in *town* (thus he called London), shook hands with me again, and mounting a splendid hunter rode off. . . . Oh! that I had been flogged out of this miserable shyness and *mauvaise honte* when I was a youth."

He says again, "When I arrived in this city [Liverpool] I felt dejected, miserably so; the uncertainty as to my reception, my doubts as to how my work would be received, all conspired to depress me. Now, how different are my sensations! I am well received everywhere, my works praised and admired, and my poor heart is at last relieved from the great anxiety that has for so many years agitated it, for I know now that I have not worked in vain."

Under the same date he writes: "I have letters given me to Baron Humboldt, General La Fayette, Sir Walter Scott, Sir Humphry Davy, Miss Hannah More, Miss Edgworth, Sir Thomas Lawrence, etc., etc. How I wish Victor could be with me; what an opportunity to see the best of this island; few ordinary individuals ever enjoyed the same reception. Many persons of distinction have begged drawing lessons of me at a guinea an hour." Although entertained so constantly, his expenses were heavy, to defray which he spent much time painting pictures on orders, and also for presentation to the Royal and other scientific societies as a token of his appreciation of the aid rendered him in making known his work to the educated, the elite, and the titled of England. Thus, under August 21, 1826, he says: "I painted many hours this day, finished my Otter; . . . I was again invited to remove to Green Bank [to the Rathbones], but declined until I have painted the Wild Turkey cock for the Royal Institution [of Liverpool], say three days more."

Under date of Dec. 13, 1826, he says: "I have spent the greater portion of this day in the company of Mr. Selby, the ornithologist. . . . We were together some hours at the Institution, — he was greatly pleased with my drawings, — and we then dined at Mr. Lizars' in company with Dr. Lizars, and we all talked ornithology. I wish I possessed the scientific knowledge of the subject that Mr. Selby does. He wished to hear my paper on the 'Buzzard,' and after doing so, took it with him to read to Sir Wm. Jardine, to whom he goes to-morrow, but will return on Monday. Later Dr. Brewster came to my room with the proof of the paper on the 'Carrion Crow.' He read it, and we both corrected. He told me it was a question whether or no I could be made a member of the Royal Academy [of Edinburgh], for only *thirty* foreigners were allowed by law, and the number was already complete; still he hoped an exception would be made in my case. He thanked me very cordially for my paper, and said Sir

Walter Scott wished to meet me, and would do so on Monday at the Royal Academy."

One more extract may here be given, to show the incentive that inspired Audubon's efforts: "We [referring to his engraver, Mr. Lizars] then talked of the engraving of the Hawks, and it seems that it will be done. Perhaps even yet fame may be mine, and enable me to provide all that is needful for my Lucy [his wife] and my children. Wealth I do not crave, but comfort; and for my boys I have the most ardent desire that they may receive the best of education, far above any that I possess; and day by day science advances, new thoughts and new ideas crowd onward, there is always fresh food for enjoyment, study, improvement, and I must place them where all this may be a possession to them."

His real feeling toward Alexander Wilson, at this period of Audubon's life, is shown by his reference to "a new work on the Birds of England." He says, "I did not like it as well as I had hoped; I much prefer Thomas Bewick. Bewick is the Wilson of England."

The fascinating pages of the 'European Journals' must now be left to the enjoyment of the reader, while we pass to a brief notice of the 'Labrador Journal' (1833), and the 'Yellowstone Journal' (1843). These have a different interest, being narratives of exploration, and hence, from the period when they were made, are of special interest for the historian and the naturalist. The voyage to Labrador was made in the schooner 'Ripley,' in command of Captain Emery, which sailed from Eastport, Me., June 6, to which port Audubon and his party returned August 31. He had with him as companions and assistants his son John, and four young men from Boston — Messrs. George Shattuck, Thomas Lincoln, William Ingalls, and Joseph Coolidge. Since the time of Audubon's Labrador expedition great changes have taken place in the bird fauna of the islands of the Gulf of St. Lawrence and the Labrador coast. This, for example, is his description of the Bird Rocks, north of the Magdalene Islands: "About ten a speck rose on the horizon, which I was told was the Rock; we sailed well, the breeze increased fast, and we neared this object apace. At eleven I could distinguish its top plainly from the deck, and thought it covered with snow to the depth of several feet; this appearance existed on every portion of the flat, projecting shelves. Godwin said, with the coolness of a man who had visited this Rock for ten successive seasons, that what we saw was not snow — but Gannets! I rubbed my eyes, took my spy-glass, and in an instant the strangest picture stood before me. They were birds we saw, — a mass of birds of such a size as I never before cast my eyes on. The whole of my party stood astounded and amazed, and all came to the conclusion that such a sight was of itself sufficient to invite any one to come across the Gulf to view it at this season. The nearer we approached, the greater our surprise at the enormous number of these birds, all calmly seated on their eggs or newly hatched brood, their heads all turned to windward, and towards us. The air above for a hundred yards, and

for some distance around the whole rock, was filled with Gannets on the wing, which from our position made it appear as if a heavy fall of snow was directly above us. . . . . The whole surface is perfectly covered with nests, placed about two feet apart, in such regular order that you may look through the lines as you would look through those of a planted patch of sweet potatoes or cabbages. The fishermen who kill these birds to get their flesh for codfish bait, ascend in parties of six or eight, armed with clubs; sometimes, indeed, the party comprises the crews of several vessels. As they reach the top, the birds, alarmed, rise with a noise like thunder, and fly off in such hurried, fearful confusion as to throw each other down, often falling on each other till there is a bank of them many feet high. The men strike them down and kill them until fatigued or satisfied. Five hundred and forty have been thus murdered in one hour by six men. The birds are skinned with little care, and the flesh cut off in chunks; it will keep fresh about a fortnight."

At another place they found two eggers collecting eggs of the Foolish Guillemot, their take for the season being estimated at about 2,000 dozen. With such inroads annually for almost a century upon the Sea Fowl, the wonder is that any are left!

On the coast of Labrador Audubon found the Pied or Labrador Duck (*Camptolaimus labradorius*) breeding on the top of low bushes, and among other noteworthy discoveries was the Finch, which he named for his young companion, Thomas Lincoln.

The Labrador trip was undertaken for the purpose of making drawings for the continuation of the 'Birds of America,' and although the journey was one of hardship, owing to almost continuous tempestuous weather, it was exceedingly profitable in results, despite the many unfavorable conditions for work.

The Missouri River expedition was undertaken solely in the interest of the 'Quadrupeds of North America,' in which Audubon and his two sons, John and Victor, were then engaged, in conjunction with Dr. Bachman. As Miss Audubon tells us, "The journey has been only briefly touched upon in former publications, and the entire record from August 16 until the return home was lost in the back of an old secretary from the time of Audubon's return in November, 1843, until August, 1896, when two of his granddaughters found it. Mrs. Audubon states in her narrative that no record of this part of the trip was known to exist, and none of the family now living had ever seen it until the date mentioned." Its discovery was most fortunate, as its publication makes available a diary of the highest value, not only to the naturalist but to the historian. As here printed it occupies about 270 pages (Vol. I, pp. 447–532, Vol. II. pp. 1–195), and every page is replete with interest. Audubon left New York March 11, and reached St. Louis March 28; delayed here by the unfavorable weather of a late spring, final departure on the long journey up the Missouri was made April 25, on the steamer

'Omega.' Fort Union was reached June 12. Of this slow, tedious journey, with the most primitive facilities for navigation, Audubon writes: "Our trip to this place has been the quickest on record, though our boat is the slowest that ever undertook to reach the Yellowstone. Including all stoppages and detentions, we have made the trip in forty-eight days and seven hours from St. Louis. We left St. Louis April 25th, at noon; reaching Fort Union June 12th, at seven in the evening." On the return journey the start was made August 16 from Fort Union, and St. Louis was reached Oct. 19, Audubon arriving at his home in New York Nov. 6.

On this journey Audubon took with him as assistants and companions his friend Edward Harris of Philadelphia, John G. Bell, the well-known New York taxidermist, the botanical artist Isaac Sprague, and Lewis Squires. Bell, Harris and Sprague are each commemorated in the names of new birds discovered during the journey — in Bell's Vireo, Harris's Finch, and Sprague's Lark. The narrative of the expedition gives a vivid picture of frontier life a half a century ago, with much valuable information respecting the character and habits of the Indians and half-breeds met with, in addition to the natural history notes and hunting episodes, of which the journal is largely composed. This was in the early days when Parrakeets were common as far north as Nebraska, and were met with by Audubon as far up the Missouri as Great Bend, South Dakota; wolves, elk, deer, antelope and bison abounded. Valuable observations are recorded on the general character of the country, as well as on the birds and mammals.

Volume II concludes with the 'Episodes,' fifty-eight in number. All but one were published in the first three volumes of the 'Ornithological Biographies,' but as they were not republished in the later 'Birds of America,' nor elsewhere till now, they will prove of special interest, as well to the general reader as to the naturalist. They treat of a great variety of subjects, including incidents of personal adventure, and often show Audubon at his best as a strong and versatile writer, and reveal, quite as much as his 'Journals,' his kind-heartedness and keen appreciation of the fancies and foibles of his fellowmen.

Audubon was blessed with a strong constitution and remarkable physical vigor and endurance. As early, however, as the Labrador journey he speaks of realizing that he was no longer young, and that he could not draw steadily for fourteen hours a day, as was formerly his custom. Yet ten years later, at the age of seventy, he undertook the arduous journey to the Yellowstone, and returned apparently none the worse for its incidents. In his younger days and till long after his return from England, his usual allowance of sleep was four hours per day; he was an early riser, and seemed rarely to experience fatigue. After a life of great activity and varied experiences, his later days were spent in the quiet of his family in New York. To the last, says his biographer, "his enthusiasm, freshness, and keenness of enjoyment and pain were never blunted. His

ease and grace of speech and movement were as noticeable in the aged man as they had been in the happy youth of Mill Grove. His courteous manners to all, high and low, were always the same; his chivalry, generosity, and honor were never dimmed, and his great personal beauty never failed to attract attention; always he was handsome." At last, "after a few days of increasing feebleness, for there was no illness," Audubon quietly passed away January 27, 1851. An appropriate monument, erected by the New York Academy of Sciences, marks his last resting place in Trinity Church Cemetery, near the place of his New York home.

The two volumes, 'Audubon and His Journals,' are beautifully printed and attractively illustrated, the illustrations including about a dozen portraits of Audubon, one of his wife, and several of each of his sons John Woodhouse and Victor Gifford. Also 'Mill Grove Mansion,' 'Flatland Ford Mansion,' and Audubon's 'Old Mill' in Pennsylvania; the monument that marks his grave, and several sketches of birds and camp scenes not previously published. There are also facsimiles of several entries in his journals, and of diplomas received from various foreign and American scientific societies. The publishers have thus done their share to give these memoirs a fitting dress.

Great praise is due Miss Audubon for her labor in preparing the manuscripts for the press, and for her admirable biography of her eminent grandfather, in which she has displayed rare good taste and judgment. The Missouri River Journals are enriched by footnotes giving extracts from the writings of contemporary travellers, confirmatory or explanatory of the text, and the European Journals by biographical notes respecting the eminent persons mentioned in the narrative. Further value and interest is added by the annotations — zoölogial, geographical and biographical in character — furnished by Dr. Coues, — a task for which his special lines of research have given him eminent fitness. Miss Audubon also acknowledges indebtedness to him for other material aid and advice. She also refers feelingly to the encouragement and assistance rendered by her sisters and other friends, and says, among her other acknowledgments: "Next to the memory of my father, Mr. Ruthven Deane has been the motive power which has caused this volume to be written." She is to be congratulated on thus having raised not only an enduring monument to the memory of an admirable man, but on having given to the world a fund of information so varied and welcome that it is hard to say to what class of readers it most strongly appeals. It must, however, especially awaken an answering chord of sympathy in the 'born naturalist,' endowed with feelings and aspirations such as inspired the great 'painter-naturalist,' whose life and works are here so fittingly set forth. — J. A. A.

Miss Merriam's 'Birds of Village and Field.'[1] — Miss Merriam's handsome volume is well designated 'A Bird Book for Beginners.' It treats of 145 of the more common species of the birds of eastern North America, which are grouped in various categories on the basis of coloration, in conformity with a 'Field Color Key.' This plan is of course no longer novel, it having been previously introduced in other similar bird books, and its efficiency well tested as an aid in identifying birds in the field. In addition to the distinctive color markings, reference is also made in the key to characteristic traits of habit and habitat, and cuts are given illustrative of form, structural details, and special markings, with a cross-reference in the key to the place in the book where the bird is described. The 'Introduction' contains, besides the key, directions for its use, under 'How to find a Bird's Name,' and tells 'Where to find Birds,' 'How to watch Birds,' 'How Birds affect Village Trees, Gardens and Farms,' and 'How to keep Birds about our Homes.' The 'Appendix' gives instruction about keeping migration records, and 'Migration Lists' are given of the land birds occurring in spring at (1) St. Louis, Mo. (based on Mr. Otto Widmann's observations), (2) Washington, D. C. (made by Mr. William Palmer), and (3) Portland, Conn. (by Mr. John H. Sage). There is also a similar set of lists for the winter birds, based on the contributions of the same observers. This is followed by 'Outline for Field Observation,' giving hints to assist beginners in field identification, relating not only to size, color and markings, but to movements and flight; to which is added a list of 'Points to note to add to knowledge of life histories.' The Appendix concludes with a classified list of books of reference.

The main text (pp. 1–363) gives a very attractively written account of the habits of each bird treated, preceded by a brief statement of its diagnostic features, and geographic distribution, with generally a full length figure of the species, and frequently other appropriate illustrations, as of bill, wing, head, tail or feet, or of insects of which the bird is a special enemy.

A special feature of Miss Merriam's book is the particular emphasis with which she urges the utility of birds to agriculture, and hence the extreme importance of their preservation, aside from any motive of humanity or sentiment. For the most part her biographies are written with much feeling and evidently from the heart; there are lapses here and there into the perfunctory style of the book maker, but they are rare, for the author knows her birds and loves them.

In this age of popular bird books, it must be becoming hard to introduce any novelties of treatment, or originality of expression, but Miss

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[1] Birds | of Village and Field | A Bird Book for Beginners | By | Florence A. Merriam | Illustrated | [Vignette] | Boston and New York | Houghton, Mifflin and Company | The Riverside Press, Cambridge | 1898 — 12mo. pp. i–xlix, 1–406, 18 half-tone plates and 220 text cuts. (Price, $2.00.)

Merriam shows that there are still possibilities in both lines, and that her book is not without *raison d'être*. It is admirably adapted as 'A Bird Book for Beginners,' and we trust it will achieve the success it so well merits. — J. A. A.

Hair and Feathers.[1]—Professor Kingsley here reviews recent investigations regarding the development and structure of hair and feathers, notably those published in Germany, of which he presents a brief summary. He makes special acknowledgment to the recent able review of the subject by Professor Keibel, in Merkel and Bonnet's 'Ergebnesse der Anatomie und Entwickelungsgeschichte,' 1896. As is now well known, hair and feathers are not only unlike in structure and appearance, but in method of origin and growth. "According to Davies all contour feathers are preceded by down-feathers," or, in other words, "the germ of the definitive feather is a direct derivative of the germ of the down-feather." The process of formation is described at some length, concluding as follows: "With the withdrawal of the pulp from the feather there is no longer any nerve or blood supply to the parts of the feather. The cells of which it is composed are dead and dry so that it seems impossible that any change can take place in it. The whole question of change in color of the fully formed feather was recently reopened by Mr. J. A. Allen who maintained that, once formed, the feathers do not change in their markings. The whole history of development seems to afford him full support. Yet this year [1897] the attempt has been made to show that feathers do change in their markings. In this, as the matter now stands, the burden of proof is upon those who support the possibility of change."

Regarding the origin of hair and feathers, reference is made to the old view that they were of homologous origin, and that both were derived from the reptilian scale. "It may be said, however," says Kingsley, "that Davies, to whom we owe the most accurate account of the development of the feather declines to regard pin-feathers [filoplumes?] as the simplest type of the avian tegumentary covering but rather as a retrograde condition; and farther, that he regards the scales upon the tarsal and digital regions of birds as secondary formations, agreeing in this with Jeffries." Again, "Maurer maintains that hair and feathers are not homologous structures. The feather, according to his view has been derived from the Reptilian scale while hair has arisen from the dermal sense organs of the Ichthyopsida as a result of a change in habits and conditions of life." A brief statement is given of Maurer's investigations and conclusions, and the reader is further advised to refer to Keibel's summary, "with its bibliography of over one hundred titles."— J. A. A.

Baur on the Birds of the Galapagos Archipelago.— Dr. Baur reiterates

[1] Hair and Feathers. By J. S. Kingsley. Amer. Naturalist, Vol. XXXI, Sept. 1897, pp. 767–777, figs. 1–14.

here [1] his belief that *Cactornis* is generically separable from *Geospiza*, contrary to the view of Mr. Ridgway, and claims that "the *Cactornis propinqua* Ridgway from Tower Island in the north and *Geospiza conirostris* Ridgway from Hood Island in the south of the Archipelago have no relationship whatever." He believes that "all the plastic genera, which are represented only by a single species on each island, as *Nesomimus*, *Certhidia*, *Pyrocephalus* and *Cactornis*, show peculiar species on nearly every island," while there are genera, "like *Geospiza* and *Cactornis*, which have more than one species on one island,—two or three, perhaps four." In explanation of this he says we "simply have to imagine that already, before the splitting up of the Galapagos land area into distinct islands, there existed at least three species of *Geospiza* and *Camarhynchus*, each of which became differentiated on the different islands. This shows at once that we can not arrange these species in one series, [as done by Mr. Ridgway] but in three parallel series," etc.

Dr. Baur makes a few remarks about the birds from Charles, Hood, Barrington, and South Albemarle Islands, and explains that the disappearance of the box of specimens at Guayaquil was not so serious a loss as supposed, only three species being lost instead of the much larger number stated by Mr. Ridgway. Of the others alcoholic specimens were preserved. Dr. Baur also makes some additions to the lists of species given by Mr. Ridgway from some of the islands. — J. A. A.

Bulletin of the B. O. C.— No. XLIX of this periodical, Dec. 29, 1897, contains among other novelties *Phaëton americanus* sp. n., the North American bird being distinguished from *P. flavirostris* by having the black on outer web of 1st primary extending within 0.50 of the end, that on 2d and 4th primaries reaching almost to the tip, the whole outer web of the 3d black, and the bill entirely black, except above the nasal opening.— E. C.

Publications Received. — **Blasius**, Rud. Die deutschen Grasmücken (Sylviinæ). (Jahresb. des Ver. für Naturwiss. zu Braunsweig, XI, 1897, pp. 22–25.)

Bocage, J. V. Barboza du. José D'Anchieta. (Jorn. de Sci. Math., Phys. e Nat., XVIII. 1897, pp. 126–132.)

Clark, W. Eagle. (1) On Some Birds from the Island of Negros, Philippines. Part III. (Ibis, Jan., 1898, pp. 119–124). (2) On Hybrids between the Capercaille and the Pheasant. (Ann. Scottish Nat. Hist., Jan., 1898, pp. 17–21.)

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[1] Birds of the Galapagos Archipelago: a Criticism of Mr. Robert Ridgway's Paper. By G. Baur, University of Chicago. Amer. Naturalist, Vol. XXXI, Sept., 1897, pp. 777–784.

Lee, Oswin A. J. Among British Birds in their Nesting Haunts. Fol., pts. viii and ix.

Merriam, Florence A. Birds of Village and Field — A Bird Book for Beginners. 12mo. Boston, 1898, Houghton, Miffin, & Co. $2.00.

Meyer, A. B. (editor). 22 Jahresversammlung der Deutschen Ornithologischen Gesellschaft in Dresden vom 28.–30. Mai 1897. (Abhandl. und Berichte des Königl. Zoolog. und Anthrop.-Ethnol. Mus. zu Dresden, VII, 1898, No. 2, pp. i–viii, 1–83, pll. i–iii.)

Sage, John H. List of Birds found about my house at Portland, Conn. 12mo, pp. 10.

Salvadori, Reliquie Ornitologiche della spedizione Bottego. (Mus. Civ. di Stor. Nat. di Genova, XVIII, 1898, pp. 652, 653.)

Worcester, Dean C., and Frank S. Bourns. Contributions to Philippine Ornithology. (Proc. U. S. Nat. Mus., XX, No. 1134, 1898, pp. 549–625.)

American Journ. Sci., Jan.–March, 1898.

American Naturalist, Jan.–March, 1898.

Annals of Scottish Nat. Hist., Jan., 1898.

Australian Museum, Records, No. 3, 1897.

Birds, Jan.–March, 1898.

Bulletin British Orn. Club, Nos. 49–51, Dec., 1897, Jan., Feb., 1898.

Bulletin Michigan Orn. Club, I, Nos. 3, 4.

Bulletin Wilson Orn. Chapter Agassiz Assoc., No. 18, Jan., 1898.

Feather, The, III, No. 4, Jan., 1898.

Forest and Stream, L, Nos. 1–13, 1898.

Iowa Ornithologist, IV, No. 1, Jan., 1898.

Knowledge, XXI, Jan.–March, 1898.

Maine Sportsman, III, No. 31–V, No. 55.

Naturalist, The, a Month. Journ. of Nat. Hist. for North of England, Jan.–March, 1898.

Ornithologischer Jahrbuch, VIII, Heft 6, IX, Heft 1.

Ornithologische Monatsberichte, VI, Nos. 1–3, Jan.–March, 1898.

Osprey, The, II, Nos. 6, 7, 1898.

Oregon Naturalist, IV, Nos. 8 and 9, Dec., 1897, Jan., 1898.

Our Animal Friends, XXV, Nos. 5–7, Jan.–March, 1898.

Ottawa Naturalist, XI, Nos. 7–10, Oct., 1897–Feb., 1898.

Proceedings California Acad. Sci. (3) Zoölogy, I, Nos. 5, 6; Botany, I, No. 2; Geology, I, No. 3.

Proceedings Acad. Nat. Sci. Philadelphia, 1897, pt. 3, Oct.–Dec., 1897.

Proceedings and Transaction Nova Scotia Inst. Sci., (2) II, pt. 3.

Science, (2) Nos. 154–168, 1898.

Shooting and Fishing, XXIII, Nos. 9–22, 1898.

Zoölogist, The, (4) Nos. 13–15, Jan.–March, 1898.

CORRESPONDENCE.

The Fauna of Muskeget Island — A Reply.

EDITORS OF 'THE AUK':—

Dear Sirs:—I take it for granted that I shall be allowed, with your accustomed courtesy, a little space in your Journal for the purpose of replying to the author of a letter entitled, 'The Fauna of Muskeget Island—A Protest,' which appeared in the number for January, 1898. This letter, I am free to confess, has given me a genuine surprise. It is only after some hesitation that I have decided to reply to it. I can but regard this 'Protest,' with its accompanying inferences, as uncalled for by the facts in the case. I therefore beg your indulgence to take up some of the points in the order that they are presented in Mr. Miller's letter.

I have shot but one Short-eared Owl for a number of years. I have had, however, in the Legislature for two years past, and again this winter, a bill in which there is a clause giving this Owl full protection. The above mentioned bird is now in Mr. William Brewster's collection, and is in the dark phase of plumage. It was one of a brood hatched on Muskeget during the summer of 1896. I would have shot the entire family had I been able to accomplish it *at the time*, for the reason that I had the interests of the Terns in view; hence all antagonistic elements, whether developed in man, mammals, or birds, were regarded as enemies and so treated. Bird protection is a complicated and difficult problem at best. I see no occasion for making it harder for those engaged in it. When a gentleman of Mr. Miller's ornithological knowledge expresses such sentiments in print as the following: "But when bird protection results in the destruction of a family of Owls, which, notwithstanding its numerical insignificance, far outweighs in biological interest the largest Tern colony on the entire Atlantic coast," I think that lovers of bird life have a right to 'protest' with more reason than he. When bird protection embraces a remnant of Terns raised from a low ebb through years of tireless protection, as it does in the present case, to colonies, the numbers of which are beyond estimate, I am of the opinion that such a condition outweighs any problematical biological interest likely to arise from Muskeget Island ever becoming a habitat of Short-eared Owls. Mr. Miller states that the vertebrate fauna of Muskeget may be roughly divided into two groups, viz., normal and abnormal. In the latter class he places the Short-eared Owl. From an ornithological standpoint this is surprising, for as far as I know it has no foundation in fact. I was not aware that Muskeget Island had *ever* produced any form of the Short-eared Owl that is different from what is found elsewhere; neither is there much likelihood of such a race occurring in the future on Muskeget. The conditions

of environment, as they at present exist, are against such abnormal development. If, during the past, no such *recognizable* pale race has been produced by the conditions as claimed and presented, what ground or promise is there of *now* establishing such a race amidst a shooting club, a life saving station, and fishermen who have numbers of cats to hold in check the vermin. These vermin are the direct result of those reintroduced on the island by Mr. Miller and associates several years ago.

I fail to appreciate and dissent from the statement near the foot of page 77 that, "by helping to offer direct historical proof of the rapidity at which modification may progress under natural conditions the Terns would be fulfilling a more important end than in gladdening the eye of the visitor to Muskeget, and the heart of the reader of Mr. Mackay's progress report." These beautiful birds are fulfilling at the present time a much more important end than the one suggested, by delighting the eye of every lover of bird life to whom the privilege of enjoying their companionship is given. Refining in their influences, what higher or better end can they serve?

GEORGE H. MACKAY.

Boston, January 17, 1898.

The Short-eared Owls of Muskeget Island.

EDITORS OF 'THE AUK':—

Dear Sirs:—I quite agree with Mr. Miller (*cf.* Auk, XV, No. 1, January, 1898, pp. 75–77) that the killing of the family of Muskeget Owls in 1896, merely because they were preying on the Terns, was ill-judged. If Muskeget were my private property I should encourage and protect the Owls, and they would be made welcome to as many Terns as they chose to eat, for I should feel confident that however fast they might increase the Terns would outstrip them in the race. As Mr. Miller says, bird protection should not be made one sided for if it be so it is certain to lose not only its scientific but much of its aesthetic value, as well as something, even, of its practical usefulness. Bird protectors, whether they be sportsmen or pure bird lovers, would do well to study more closely the balance of nature, for it concerns the success of their enterprises far more closely than they seem to realize. Even the naturalists do not as yet fully understand the complex workings and delicate adjustments of a system which, when not interfered with by man, seems invariably to result in the production and maintenance of the richest possible fauna, of which the predatory and non-predatory forms increase together to the full limits of the capacity for food and shelter which the country furnishes. No one who has ever visited a primitive region, well timbered, well watered and not too cold, can deny the truth of this, but it is certainly difficult to understand or explain how Hawks, Owls, Herons,

Kingfishers and the various carnivorous mammals can exist, as they so often do, in the greatest abundance without exterminating the defenseless creatures on which they prey.

Mr. Miller, however, bases his protest on the assumption that "a recognizable race" of the Short-eared Owl formerly existed on Muskeget, and that the birds which Mr. Mackay caused to be destroyed might have reproduced a similarly interesting form had they been left unmolested. In support of the former assertion he refers to Mr. Maynard's statement (Birds of Eastern N. Am., 1881, p. 264) that some specimens taken there in July, 1870 were so "bleached as to appear nearly white in the distance" adding that "of course, at so early a period in the summer, this bleaching could hardly have been due to a mechanically abraded condition of the plumage, and indeed Mr. Maynard has personally assured me that such was not the case, but that the birds represented a pale, resident race."

I had the pleasure of accompanying Mr. Maynard to Muskeget in 1870, and my notes relating to our mutual experience state that but four Short-eared Owls were seen, and that all of these were shot. Three of the skins fell to my share when the spoils of the trip were divided, and are still in my collection. A male and female killed June 30 are, as Mr. Maynard says, very pale in general coloring but the third bird, a female taken July 2, is much darker. The plumage of all three birds is excessively ragged, many of the feathers having lost, by abrasion, nearly or quite one half of their normal area, while some of them are worn away almost to the shaft. But even the lighter two birds have a number of scapulars and interscapulars which are perfect in outline and which are not only much darker than the worn portions of the plumage, but nearly or quite as dark as corresponding feathers of birds taken in autumn or winter at places hundreds or even thousands of miles distant from Muskeget. These feathers may have been of recent growth at the time when the birds were killed but it is more probable that they were old feathers which had been protected by the overlapping plumage from the bleaching and disintegrating effects of the air and sunlight, for the inner quills, as well as the inner webs of the outer primaries and tail-feathers, are almost equally fresh and perfect, in striking contrast with the frayed and bleached outer portions of some of the wing and tail-feathers.

It is, of course, quite safe to assert that at some time earlier in the season the general coloring of these birds must have been not unlike that which the unworn parts of the plumage now exhibit, and it seems not unreasonable to assume that even these unworn feathers must have lost something of their original depth and richness of tint. If this be granted, and a very slight allowance made for fading, I do not see how it can be maintained that the Short-eared Owls taken by Mr. Maynard and myself on Muskeget Island in 1870 were in any respects peculiar. Even if the allowance for fading be not conceded it is quite possible, as I have already stated, to match the unworn feathers by corresponding feathers

on light-colored birds taken during the migrations in other parts of New England and elsewhere. It follows as a matter of course that there is no evidence, historical or otherwise, that Muskeget has ever harbored a "recognizable local race" of the Short-eared Owl. It would be indeed remarkable had such been the case, for the food resources of the island, excepting during the brief season when the Terns are breeding there, are not sufficient to supply the wants of more than two or three families of Owls, and a local race which at no one period of its existence could have been represented by more than a score of individuals would be something of an anomaly.

In this connection it may be worth remarking (since the fact seems to have been generally overlooked by American ornithologists) that there is a very decided and constant difference in coloring between the sexes of the Short-eared Owl, the males, when in fully adult plumage, being very much lighter-colored than the females. I have several males taken during the migrations at Ipswich, Massachusetts, as well as from the Pacific Coast, which are almost as pale as the Muskeget birds, and there is not a single fully adult male in my large series which is as dark as the average female. Dresser, in his 'Birds of Europe' (V, p. 258), states that the same sexual difference is found in Old World representatives of the Short-eared Owl.

Very truly yours,

WILLIAM BREWSTER.

Cambridge, Mass.
March, 1898.

An Untrustworthy Observer.

EDITORS OF 'THE AUK':—

Dear Sirs: — Those members of the A. O. U. who were present at the meeting last November will doubtless recall a paper read by Mr. Edwin Irvine Haines entitled 'The Summer Birds of the Catskill Mountains with remarks upon the Faunæ of the Region.' The paper indicated a 'chumminess' on the part of the birds that enabled the writer to fairly rain down records of species that ordinarily, during the summer season, are satisfied to keep out of the Catskills. Several sets of eggs of the Solitary Sandpiper (*Totanus solitarius*), Canada Jay (*Perisoreus canadensis*), and Ipswich Sparrow (*Ammodramus princeps*) had been obtained, while such species as the Hudsonian Chickadee (*Parus hudsonicus*) and White-crowned Sparrow (*Zonotrichia albicollis*) had been found hobnobbing with the equally abundant Dickcissel (*Spiza americana*) and Tufted Titmouse (*Parus bicolor*). A tray full of skins, chiefly without labels and in winter plumage, was exhibited in support of the many extraordinary discoveries of which the above are samples. On asking Mr. Haines for

the loan of his birds, he informed me that a portion of them had been sent to Dr. Merriam in Washington, but the following were submitted to me, viz.: White-crowned Sparrow (*Zonotrichia leucophrys*), Ruby-crowned Kinglet (*Regulus calendula*), Golden-crowned Kinglet (*R. satrapa*), Hermit Thrush (*Turdus aonalaschkæ pallasii*), Gray-cheeked Thrush (*T. aliciæ*), Bicknell's Thrush (*T. a. bicknelli*), Olive-backed Thrush (*Turdus ustulatus swainsonii*), Tufted Titmouse (*Parus bicolor*), and Pigeon Hawk (*Falco columbarius*). Mr. Haines assured me the Thrushes had all been obtained between the middle of June and the middle of July; the other birds (the Kinglets represented by no less than seven specimens) bore labels indicating capture in the Catskills on various dates between June 10 and June 19, 1897. Suffice it to say, not one of these birds was in breeding plumage! This statement will, I think, be borne out by Messrs. J. A. Allen and D. G. Elliot, who also examined them.

Now the point of all this is that Mr. Haines's ornithological statements are not in accordance with facts, and as he has figured in print a number of times during the past year or two, it is but natural to view all of his work with suspicion. One article, 'The Kinglets and their Distribution,' (The Osprey, I, Feb. 1897, pp. 73–75), asserts that he has found both species breeding in the Catskills. As a matter of fact his "June" birds are *not* breeding birds. It is not likely now that his additions to the Catskill fauna will ever be published, nor will the breeding of Brünnich's Murre (*Uria lomvia*) at New Rochelle, N. Y., as announced on a program of the Linnæan Society of New York, become a record, but it is time to put a check to such perverted ambitions, and while I am quite unbiassed by any personal animus, I feel that my fellow members of the A. O. U. should be warned against a person who has shown himself to be so eminently undeserving of credence.

Yours very truly,

JONATHAN DWIGHT, JR.

New York, N. Y.,
Feb. 21, 1898.

NOTES AND NEWS.

DR. ANDERS JOHAN MALMGREN, a Corresponding Member of the A. O. U., who died in Helsingfors, April 12, 1897, was born in Kajana, Finland, in 1834. His life was quite eventful and successful in many directions. Thus, in 1869, he became Professor of Zoölogy at the University of Helsingfors; in 1874 he was made Commissioner of Fisheries; and in 1889 he was appointed Governor of the northernmost province of Finland.

As a zoölogist Malmgren paid most attention to the fauna of the boreal regions of Europe, and he made valuable contributions to our knowledge

of the mammals, fishes, and especially of the annulata of the western portion of the Arctic Ocean. To us Malmgren is more particularly interesting because of his ornithological explorations in Spitzbergen. He made no less than three trips to that Ultima Thule viz., in 1861, 1864 and 1868, the ornithological results being published in Cabanis's 'Journal für Ornithologie.' Malmgren clearly understood and distinguished the geographical forms inhabiting that interesting archipelago, and it is important to record that he was a trinominalist long before that form of nomenclature was accepted in this country.—LEONHARD STEJNEGER.

DR. FELIX GEORG HERMAN AUGUST MOJSISOVICS VON MOJSVÁR, a Corresponding Member of the A. O. U., died on August 27, 1897, in the city of Graz, Austria, 48 years old. He was, at the time of his death, professor of Zoölogy and Comparative Anatomy at the Imp. Technical High School; 'Privat Docent' at the University; and Curator of the zoölogical division of the 'Johanneum,' institutions all located at Graz.

Mojsisovics von Mojsvár was particularly interested in the fauna of Europe and the anatomy of vertebrates, but he was not a prolific writer. As an ornithologist he contributed chiefly to the avifauna of Austria-Hungary, particularly that of Styria and of southern Hungary and Slavonia. In 1884 he undertook a trip to the latter provinces, the ornithological report upon which contained a great deal of information interestingly presented.—LEONHARD STEJNEGER.

WE HAVE received the prospectus of 'A Monograph of the Turdidæ, or Family of Thrushes,' by the late Henry Seebohm, edited and completed after his death by Dr. R. Bowdler Sharpe. The work will be published by Henry Sotheran & Co., 37 Piccadilly, London, in 12 parts, at 1£ 16s per part. The work will be in Imperial 4to, and each part will contain 12 colored plates, by Keulemans. The edition will be limited to 250 copies.

D. APPLETON & Co. announce as in press and soon to be issued 'The Art of Taxidermy' by John Rowley, Chief Taxidermist at the American Museum of Natural History. It will be profusely illustrated, and treat the subject from the standpoint of the latest and most approved modern methods.

THE DELAWARE VALLEY ORNITHOLOGICAL CLUB held its eighth annual meeting January 6, 1898, at the Academy of Natural Sciences, Philadelphia, thirty-four members being in attendance. The club is in a more flourishing condition than ever before, the membership numbering seventy-five. During the past year sixteen regular meetings were held and one public meeting.

Among the more important papers read were 'The Genus Sturnella' and 'Molting of the Sanderling,' by Witmer Stone; 'Brant Shooting,' by I. N. DeHaven; 'New Jersey Shore Birds,' by Wm. L. Baily; 'Local Reminiscenses of Audubon,' by Geo. Spencer Morris; 'Ornithological Photo-

graphy,' by Wm. L. Whitaker; 'Notes on Nests found in Salem Co., N. J.,' by Wm. W. Justin, Jr.; 'The American Barn Owl,' and 'Great Gull Island,' by J. Harris Reed; 'Fossil Birds and their Living Allies,' by S. N. Rhoads.

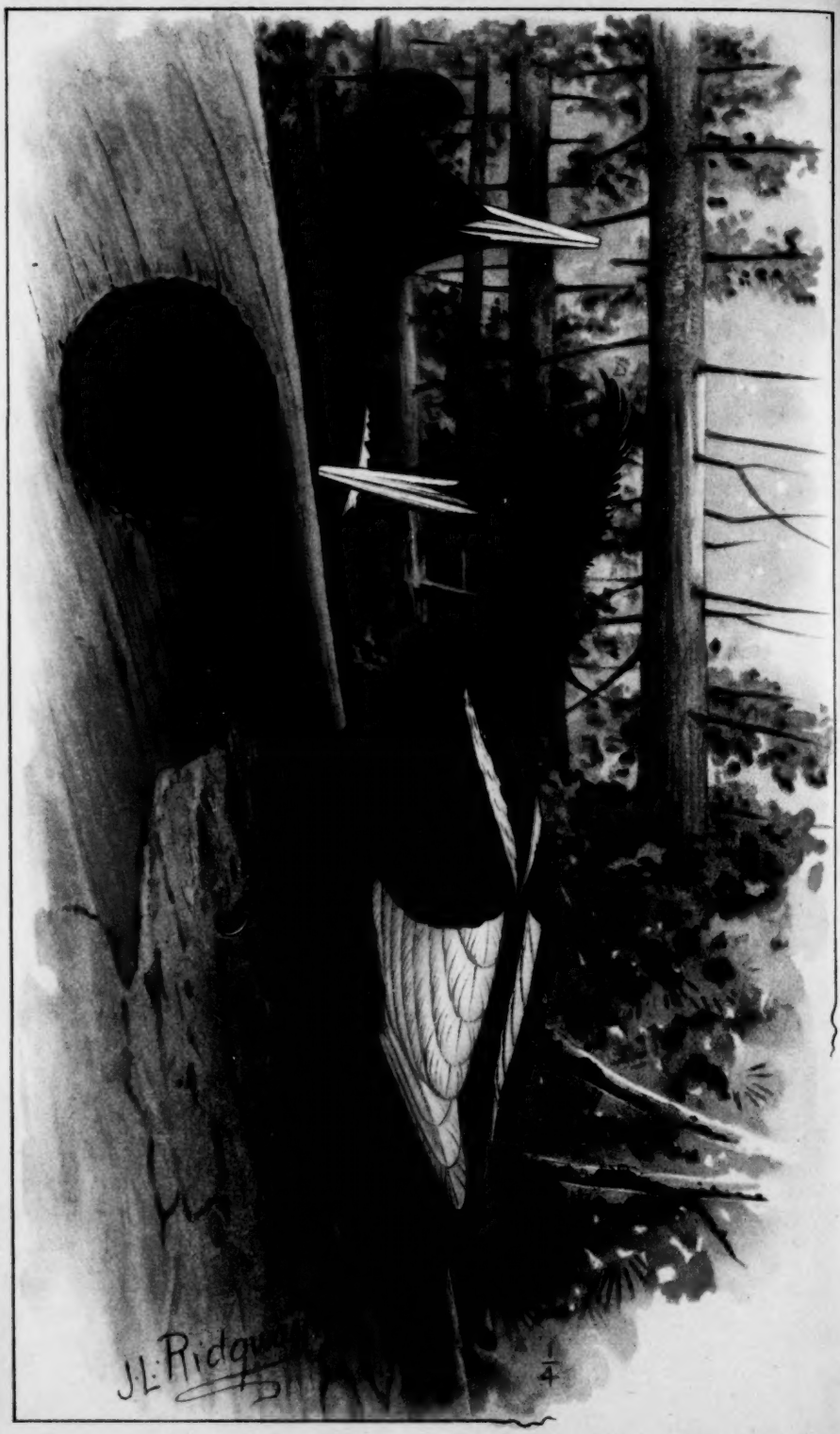
The officers for the ensuing year are: President, I. Norris DeHaven; Vice-President, Chas. J. Rhoads; Secretary, William A. Shryock; Treasurer, Wm. L. Baily.

A SECTION OF ORNITHOLOGY has been recently formed by the members of the California Academy of Sciences interested in the study of birds, with the following officers: President, Leverett M. Loomis; Vice-President, John W. Mailliard; Secretary and Treasurer, Henry B. Kaeding.

The meetings are held on the first Tuesday of each month for the presentation of papers, informal discussion of matters relating to ornithology and the examination of specimens. The collection and library of the Department of Ornithology have been placed at the disposal of the Section.

THE UNITED ORNITHOLOGISTS OF MAINE held their second annual meeting at the rooms of the Portland Society of Natural History, Portland, Maine, Dec. 31, 1897, and Jan. 1, 1898. Twenty-six new members were elected, and also the following officers for 1898: President, Ora W. Knight; Vice-President, Wm. L. Powers; Secretary-Treasurer, L. W. Robbins; Editor, James Carroll Mead; Councillors, Herbert L. Spinney, and Prof. Asa L. Lane. A plan for work for the ensuing year was adopted and the following papers read. 'How I became an Ornithologist, by Geo. A. Boardman; 'Talks on Maine Birds, by Prof. A. L. Lane; 'Loons on our Inland Waters,' by James Carroll Mead'; Ornithology in our Public Schools,' by Principal Wm. L. Powers; 'Migration of Birds as observed at Seguin Light,' by H. L. Spinney; 'Birds as Home Lovers,' by Ora W. Knight. The recommendation that "the family of Ducks, Geese and Swans (Anatidæ), and the Thrushes (Turdidæ) be the special objects of study," during the ensuing year was adopted. The report of the meeting occupies three pages of the 'Maine Sportsman' for February, 1898 (Vol. V, No. 54, pp. 8, 20, 21), and includes in full the paper on 'Migration of Birds at Seguin Light House,' by Herbert L. Spinney, 2d Assist. Keeper.

The 'Maine Sportsman' is the official organ of the United Ornithologists of Maine, and contains a department of 'Ornithology,' devoted to the work and interests of the Society, and often includes notes and papers of permanent interest and value. In the number for May, 1897, for example, is a 'Twenty Years' Review of the Scoter Duck' (*Oidemia deglandi*), by Herbert L. Spinney. Also in earlier numbers, 'A Visit to Some Maine Heronries' by O. W. Knight (July, 1896); 'Breeding of the Northern Raven on Seguin Island,' by Herbert L. Spinney (Aug., 1896); 'Randon Notes on our Sea Birds, by J. Merton Swain (Sept., 1896); and 'The Ruffed Grouse of Maine,' by A. H. Norton. The Society also takes an earnest interest in the Protection of Birds.



IMPERIAL WOODPECKER ♂ & ♀
(CAMPEPHILUS IMPERIALIS GOULD.)

A. Hoen & Co. Lithocaustic, Baltimore